



# Journal

of the Academy  
of Management

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BOOKS

4 new Wiley books of interest to management...

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This book is primarily designed for executives, man-

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The  
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The Academy of Management is dedicated to the search for truth and the advancement of learning through free discussion and research in the field of management. The interest of the Academy lies in the theory and practice of management, both administrative and operative.

The general objectives of the Academy are to foster: (1) a philosophy of management that will make possible an accomplishment of the economic and social objectives of an industrial society with increasing economy and effectiveness, (2) greater understanding by executive leadership of the requirements for a sound application of the scientific method to the solution of managerial problems, based on such a philosophy, and (3) wider acquaintance and closer cooperation among persons interested in the development of a philosophy and science of management.

Authors are invited to submit articles, discussions, and other communications contributing to these objectives. Article manuscripts should generally be approximately 1500 to 3000 words in length, although articles of greater length will occasionally be published. Articles reporting the results of significant research, and those analyzing questions of scholarly import are particularly desired.

Short notes or discussions relating to specific aspects of management thought, philosophy, theory, techniques of wide applicability, curriculum-building, or teaching are also invited. Since new ideas are tinged with controversy, the *Journal* expects considerable argumentation. Rebuttals, rejoinders, comments, objections, or extensions of a writer's thoughts will therefore be welcome.

Manuscripts should be typed double-spaced on one side of the page, with footnotes and diagrams on separate pages. Authors should submit an original copy on bond paper with one carbon copy. Names of the author and institution should be omitted from the first page, and placed instead on a cover page. Manuscripts are submitted to members of The Editorial Board by code numbers so that the authors remain unidentifiable.

Suggestions and comments on matters relating to the *Journal* are at all times welcome.

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## A Tribute

With this issue, the Editorship of the *Journal* changes hands. Since its inception more than three years ago, the *Journal* has achieved prominence under the able guidance of Paul M. Dauten, Jr.

During Professor Dauten's editorship, the *Journal* has grown steadily in readership and influence. Working at times under difficult circumstances, Professor Dauten met his deadlines and ably conducted the complicated business affairs of the *Journal*. His high standards of excellence and his concern for the quality and integrity of the *Journal* were always paramount in directing his editorial activities.

To the College of Commerce at the University of Illinois goes the appreciation of the Academy of Management for three years of assistance and support for the *Journal* and its editor. The editorial and business policies which Professor Dauten developed have provided a secure foundation from which to grow in the years ahead. His persistent and devoted efforts in behalf of the *Journal* deserve the enduring appreciation of members of the Academy and readers of the *Journal*.

DALTON E. MCFARLAND  
for the Research and Publications Committee  
and the Academy of Management

## Organization Theory: An Overview and an Appraisal

WILLIAM G. SCOTT  
Associate Professor of Management  
De Paul University

Man is intent on drawing himself into a web of collectivized patterns. "Modern man has learned to accommodate himself to a world increasingly organized. The trend toward ever more explicit and consciously drawn relationships is profound and sweeping; it is marked by depth no less than by extension."<sup>1</sup> This comment by Seidenberg nicely summarizes the pervasive influence of organization in many forms of human activity.

Some of the reasons for intense organizational activity are found in the fundamental transitions which revolutionized our society, changing it from a rural culture, to a culture based on technology, industry, and the city. From these changes, a way of life emerged characterized by the *proximity* and *dependency* of people on each other. Proximity and dependency, as conditions of social life, harbor the threats of human conflict, capricious antisocial behavior, instability of human relationships, and uncertainty about the nature of the social structure with its concomitant roles.

Of course, these threats to social integrity are present to some degree in all societies, ranging from the primitive to the modern. But, these threats become dangerous when the harmonious functioning of a society rests on the maintenance of a highly intricate, delicately balanced form of human collaboration. The civilization we have created depends on the preservation of a precarious balance. Hence, disrupting forces impinging on this shaky form of collaboration must be eliminated or minimized.

Traditionally, organization is viewed as a vehicle for accomplishing goals and objectives. While this approach is useful, it tends to obscure the inner workings and internal purposes of organization itself. Another fruitful way of treating organization is as a mechanism having the ultimate purpose of offsetting those forces which undermine human collaboration. In this sense, organization tends to minimize conflict, and to lessen the significance of individual behavior which deviates from values that the organization has established as worthwhile. Further, organization increases stability in human relationships by reducing uncertainty regarding the nature of the system's structure and the human roles which are inherent to it. Corollary to this point, organization enhances the predictability of human action, because it limits the number of behavioral alternatives available to an individual. As Presthus points out:

<sup>1</sup> Roderick Seidenberg, *Post Historic Man* (Boston: Beacon Press, 1951), p. 1.

Organization is defined as a system of structural interpersonal relations . . . individuals are differentiated in terms of authority, status, and role with the result that personal interaction is prescribed. . . . Anticipated reactions tend to occur, while ambiguity and spontaneity are decreased.<sup>2</sup>

In addition to all of this, organization has built-in safeguards. Besides prescribing acceptable forms of behavior for those who elect to submit to it, organization is also able to counterbalance the influence of human action which transcends its established patterns.<sup>3</sup>

Few segments of society have engaged in organizing more intensively than business.<sup>4</sup> The reason is clear. Business depends on what organization offers. Business needs a system of relationships among functions; it needs stability, continuity, and predictability in its internal activities and external contacts. Business also appears to need harmonious relationships among the people and processes which make it up. Put another way, a business organization has to be free, relatively, from destructive tendencies which may be caused by divergent interests.

As a foundation for meeting these needs rests administrative science. A major element of this science is organization theory, which provides the grounds for management activities in a number of significant areas of business endeavor. Organization theory, however, is not a homogeneous science based on generally accepted principles. Various theories of organization have been, and are being evolved. For example, something called "modern organization theory" has recently emerged, raising the wrath of some traditionalists, but also capturing the imagination of a rather elite *avant-garde*.

The thesis of this paper is that modern organization theory, when stripped of its irrelevancies, redundancies, and "speech defects," is a logical and vital evolution in management thought. In order for this thesis to be supported, the reader must endure a review and appraisal of more traditional forms of organization theory which may seem elementary to him.

In any event, three theories of organization are having considerable influence on management thought and practice. They are arbitrarily labeled in this paper as the classical, the neo-classical, and the modern. Each of these is fairly distinct; but they are not unrelated. Also, these theories are on-going, being actively supported by several schools of management thought.

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<sup>2</sup> Robert V. Presthus, "Toward a Theory of Organizational Behavior," *Administrative Science Quarterly*, June, 1958, p. 50.

<sup>3</sup> Regulation and predictability of human behavior are matters of degree varying with different organizations on something of a continuum. At one extreme are bureaucratic type organizations with tight bonds of regulation. At the other extreme are voluntary associations, and informal organizations with relatively loose bonds of regulation.

This point has an interesting sidelight. A bureaucracy with tight controls and a high degree of predictability of human action appears to be unable to distinguish between destructive and creative deviations from established values. Thus the only thing which is safeguarded is the *status quo*.

<sup>4</sup> The monolithic institutions of the military and government are other cases of organizational preoccupation.

## THE CLASSICAL DOCTRINE

For lack of a better method of identification, it will be said that the classical doctrine deals almost exclusively with the *anatomy of formal organization*. This doctrine can be traced back to Frederick W. Taylor's interest in functional foremanship and planning staffs. But most students of management thought would agree that in the United States, the first systematic approach to organization, and the first comprehensive attempt to find organizational universals, is dated 1931 when Mooney and Reiley published *Onward Industry*.<sup>5</sup> Subsequently, numerous books, following the classical vein, have appeared. Two of the more recent are Brech's, *Organization*<sup>6</sup> and Allen's, *Management and Organization*.<sup>7</sup>

Classical organization theory is built around four key pillars. They are the division of labor, the scalar and functional processes, structure, and span of control. Given these major elements just about all of classical organization theory can be derived.

(1) *The division of labor* is without doubt the cornerstone among the four elements.<sup>8</sup> From it the other elements flow as corollaries. For example, *scalar* and *functional* growth requires specialization and departmentalization of functions. *Organization structure* is naturally dependent upon the direction which specialization of activities travels in company development. Finally, *span of control* problems result from the number of specialized functions under the jurisdiction of a manager.

(2) *The scalar and functional processes* deal with the vertical and horizontal growth of the organization, respectively.<sup>9</sup> The scalar process refers to the growth of the chain of command, the delegation of authority and responsibility, unity of command, and the obligation to report.

The division of the organization into specialized parts and the regrouping of the parts into compatible units are matters pertaining to the functional process. This process focuses on the horizontal evolution of the line and staff in a formal organization.

(3) *Structure* is the logical relationships of functions in an organization, arranged to accomplish the objectives of the company efficiently. Structure implies system and pattern. Classical organization theory usually works with two basic structures, the line and the staff. However, such activities as committee and liaison functions fall quite readily into the purview of structural considerations. Again, structure is the vehicle for introducing logical and consistent relationships among the diverse functions which comprise the organization.<sup>10</sup>

<sup>5</sup> James D. Mooney and Alan C. Reiley, *Onward Industry* (New York: Harper and Brothers, 1931). Later published by James D. Mooney under the title *Principles of Organization*.

<sup>6</sup> E. F. L. Brech, *Organization* (London: Longmans, Green and Company, 1957).

<sup>7</sup> Louis A. Allen, *Management and Organization* (New York: McGraw-Hill Book Company, 1958).

<sup>8</sup> Usually the division of labor is treated under a topical heading of departmentation, see for example: Harold Koontz and Cyril O'Donnell, *Principles of Management* (New York: McGraw-Hill Book Company, 1959), Chapter 7.

<sup>9</sup> These processes are discussed at length in Ralph Currier Davis, *The Fundamentals of Top Management* (New York: Harper and Brothers, 1951), Chapter 7.

<sup>10</sup> For a discussion of structure see: William H. Newman, *Administrative Action* (Englewood Cliffs: Prentice-Hall, Incorporated, 1951), Chapter 16.

(4) *The span of control* concept relates to the number of subordinates a manager can effectively supervise. Graicunas has been credited with first elaborating the point that there are numerical limitations to the subordinates one man can control.<sup>11</sup> In a recent statement on the subject, Brech points out, "span" refers to ". . . the number of persons, themselves carrying managerial and supervisory responsibilities, for whom the senior manager retains his over-embracing responsibility of direction and planning, co-ordination, motivation, and control."<sup>12</sup> Regardless of interpretation, span of control has significance, in part, for the shape of the organization which evolves through growth. Wide span yields a flat structure; short span results in a tall structure. Further, the span concept directs attention to the complexity of human and functional interrelationships in an organization.

It would not be fair to say that the classical school is unaware of the day-to-day administrative problems of the organization. Paramount among these problems are those stemming from human interactions. But the interplay of individual personality, informal groups, intraorganizational conflict, and the decision-making processes in the formal structure appears largely to be neglected by classical organization theory. Additionally, the classical theory overlooks the contributions of the behavioral sciences by failing to incorporate them in its doctrine in any systematic way. In summary, classical organization theory has relevant insights into the nature of organization, but the value of this theory is limited by its narrow concentration on the formal anatomy of organization.

### NEOCLASSICAL THEORY OF ORGANIZATION

The neoclassical theory of organization embarked on the task of compensating for some of the deficiencies in classical doctrine. The neoclassical school is commonly identified with the human relations movement. Generally, the neoclassical approach takes the postulates of the classical school, regarding the pillars of organization as givens. But these postulates are regarded as modified by people, acting independently or within the context of the informal organization.

One of the main contributions of the neoclassical school is the introduction of behavioral sciences in an integrated fashion into the theory of organization. Through the use of these sciences, the human relationists demonstrate how the pillars of the classical doctrine are affected by the impact of human actions. Further, the neoclassical approach includes a systematic treatment of the informal organization, showing its influence on the formal structure.

Thus, the neoclassical approach to organization theory gives evidence of accepting classical doctrine, but superimposing on it modifications resulting from individual behavior, and the influence of the informal group. The inspiration of the neoclassical school were the Hawthorne studies.<sup>13</sup> Current examples of the neoclassical approach are found in human relations books like Gardner and Moore,

<sup>11</sup> V. A. Graicunas, "Relationships in Organization," *Papers on the Science of Administration* (New York: Columbia University, 1937).

<sup>12</sup> Brech, *op. cit.*, p. 78.

<sup>13</sup> See: F. J. Roethlisberger and William J. Dickson, *Management and the Worker* (Cambridge: Harvard University Press, 1939).

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*Human Relations in Industry*,<sup>14</sup> and Davis, *Human Relations in Business*.<sup>15</sup> To a more limited extent, work in industrial sociology also reflects a neoclassical point of view.<sup>16</sup>

It would be useful to look briefly at some of the contributions made to organization theory by the neoclassicists. First to be considered are modifications of the pillars of classical doctrine; second is the informal organization.

*Examples of the Neoclassical Approach to the Pillars of Formal Organization Theory*

(1) The *division of labor* has been a long standing subject of comment in the field of human relations. Very early in the history of industrial psychology study was made of industrial fatigue and monotony caused by the specialization of the work.<sup>17</sup> Later, attention shifted to the isolation of the worker, and his feeling of anonymity resulting from insignificant jobs which contributed negligibly to the final product.<sup>18</sup>

Also, specialization influences the work of management. As an organization expands, the need concomitantly arises for managerial motivation and coordination of the activities of others. Both motivation and coordination in turn relate to executive leadership. Thus, in part, stemming from the growth of industrial specialization, the neoclassical school has developed a large body of theory relating to motivation, coordination, and leadership. Much of this theory is derived from the social sciences.

(2) Two aspects of the *scalar and functional* processes which have been treated with some degree of intensity by the neoclassical school are the delegation of authority and responsibility, and gaps in or overlapping of functional jurisdictions. The classical theory assumes something of perfection in the delegation and functionalization processes. The neoclassical school points out that human problems are caused by imperfections in the way these processes are handled.

For example, too much or insufficient delegation may render an executive incapable of action. The failure to delegate authority and responsibility equally may result in frustration for the delegatee. Overlapping of authorities often causes clashes in personality. Gaps in authority cause failures in getting jobs done, with one party blaming the other for shortcomings in performance.<sup>19</sup>

The neoclassical school says that the scalar and functional processes are theoretically valid, but tend to deteriorate in practice. The ways in which they break

<sup>14</sup> Burleigh B. Gardner and David G. Moore, *Human Relations in Industry* (Homewood: Richard D. Irwin, 1955).

<sup>15</sup> Keith Davis, *Human Relations in Business* (New York: McGraw-Hill Book Company, 1957).

<sup>16</sup> For example see: Delbert C. Miller and William H. Form, *Industrial Sociology* (New York: Harper and Brothers, 1951).

<sup>17</sup> See: Hugo Munsterberg, *Psychology and Industrial Efficiency* (Boston: Houghton Mifflin Company, 1913).

<sup>18</sup> Probably the classic work is: Elton Mayo, *The Human Problems of an Industrial Civilization* (Cambridge: Harvard University, 1946, first printed 1933).

<sup>19</sup> For further discussion of the human relations implications of the scalar and functional processes see: Keith Davis, *op. cit.*, pp. 60-66.

down are described, and some of the human causes are pointed out. In addition the neoclassicists make recommendations, suggesting various "human tools" which will facilitate the operation of these processes.

(3) *Structure* provides endless avenues of analysis for the neoclassical theory of organization. The theme is that human behavior disrupts the best laid organizational plans, and thwarts the cleanliness of the logical relationships founded in the structure. The neoclassical critique of structure centers on frictions which appear internally among people performing different functions.

Line and staff relations is a problem area, much discussed, in this respect. Many companies seem to have difficulty keeping the line and staff working together harmoniously. Both Dalton<sup>20</sup> and Juran<sup>21</sup> have engaged in research to discover the causes of friction, and to suggest remedies.

Of course, line-staff relations represent only one of the many problems of structural frictions described by the neoclassicists. As often as not, the neoclassicists will offer prescriptions for the elimination of conflict in structure. Among the more important harmony-rendering formulae are participation, junior boards, bottom-up management, joint committees, recognition of human dignity, and "better" communication.

(4) An executive's *span of control* is a function of human determinants, and the reduction of span to a precise, universally applicable ratio is silly, according to the neoclassicists. Some of the determinants of span are individual differences in managerial abilities, the type of people and functions supervised, and the extent of communication effectiveness.

Coupled with the span of control question are the human implications of the type of structure which emerges. That is, is a tall structure with a short span or a flat structure with a wide span more conducive to good human relations and high morale? The answer is situational. Short span results in tight supervision; wide span requires a good deal of delegation with looser controls. Because of individual and organizational differences, sometimes one is better than the other. There is a tendency to favor the looser form of organization, however, for the reason that tall structures breed autocratic leadership, which is often pointed out as a cause of low morale.<sup>22</sup>

#### *The Neoclassical View of the Informal Organization*

Nothing more than the barest mention of the informal organization is given even in the most recent classical treatises on organization theory.<sup>23</sup> Systematic discussion of this form of organization has been left to the neoclassicists. The informal organization refers to people in group associations at work, but these associations are not specified in the "blueprint" of the formal organization. The informal organization means natural groupings of people in the work situation.

<sup>20</sup> Melville Dalton, "Conflicts between Staff and Line Managerial Officers," *American Sociological Review*, June, 1950, pp. 342-351.

<sup>21</sup> J. M. Juran, "Improving the Relationship between Staff and Line," *Personnel*, May, 1956, pp. 515-524.

<sup>22</sup> Gardner and Moore, *op. cit.*, pp. 237-243.

<sup>23</sup> For example: Brech, *op. cit.*, pp. 27-29; and Allen, *op. cit.*, pp. 61-62.

In a general way, the informal organization appears in response to the social need—the need of people to associate with others. However, for analytical purposes, this explanation is not particularly satisfying. Research has produced the following, more specific determinants underlying the appearance of informal organizations.

(1) The *location* determinant simply states that in order to form into groups of any lasting nature, people have to have frequent face-to-face contact. Thus, the geography of physical location in a plant or office is an important factor in predicting who will be in what group.<sup>24</sup>

(2) *Occupation* is key factor determining the rise and composition of informal groups. There is a tendency for people performing similar jobs to group together.<sup>25</sup>

(3) *Interests* are another determinant for informal group formation. Even though people might be in the same location, performing similar jobs, differences of interest among them explain why several small, instead of one large, informal organizations emerge.

(4) *Special issues* often result in the formation of informal groups, but this determinant is set apart from the three previously mentioned. In this case, people who do not necessarily have similar interests, occupations, or locations may join together for a common cause. Once the issue is resolved, then the tendency is to revert to the more "natural" group forms.<sup>26</sup> Thus, special issues give rise to a rather impermanent informal association; groups based on the other three determinants tend to be more lasting.

When informal organizations come into being they assume certain characteristics. Since understanding these characteristics is important for management practice, they are noted below:

(1) Informal organizations act as agencies of *social control*. They generate a culture based on certain norms of conduct which, in turn, demands conformity from group members. These standards may be at odds with the values set by the formal organization. So an individual may very well find himself in a situation of conflicting demands.

(2) The form of human interrelationships in the informal organization requires *techniques of analysis* different from those used to plot the relationships of people in a formal organization. The method used for determining the structure of the informal group is called sociometric analysis. Sociometry reveals the complex structure of interpersonal relations which is based on premises fundamentally unlike the logic of the formal organization.

(3) Informal organizations have *status and communication* systems peculiar to themselves, not necessarily derived from the formal systems. For example, the grapevine is the subject of much neoclassical study.

<sup>24</sup> See: Leon Festinger, Stanley Schachter, and Kurt Back, *Social Pressures in Informal Groups* (New York: Harper and Brothers, 1950), pp. 153-163.

<sup>25</sup> For example see: W. Fred Cottrell, *The Railroader* (Palo Alto: The Stanford University Press, 1940), Chapter 3.

<sup>26</sup> Except in cases where the existence of an organization is necessary for the continued maintenance of employee interest. Under these conditions the previously informal association may emerge as a formal group, such as a union.

(4) Survival of the informal organization requires stable continuing relationships among the people in them. Thus, it has been observed that the informal organization *resists change*.<sup>27</sup> Considerable attention is given by the neoclassicists to overcoming informal resistance to change.

(5) The last aspect of analysis which appears to be central to the neoclassical view of the informal organization is the study of the *informal leader*. Discussion revolves around who the informal leader is, how he assumes this role, what characteristics are peculiar to him, and how he can help the manager accomplish his objectives in the formal organization.<sup>28</sup>

This brief sketch of some of the major facets of informal organization theory has neglected, so far, one important topic treated by the neoclassical school. It is the way in which the formal and informal organizations interact.

A conventional way of looking at the interaction of the two is the "live and let live" point of view. Management should recognize that the informal organization exists, nothing can destroy it, and so the executive might just as well work with it. Working with the informal organization involves not threatening its existence unnecessarily, listening to opinions expressed for the group by the leader, allowing group participation in decision-making situations, and controlling the grapevine by prompt release of accurate information.<sup>29</sup>

While this approach is management centered, it is not unreasonable to expect that informal group standards and norms could make themselves felt on formal organizational policy. An honestly conceived effort by managers to establish a working relationship with the informal organization could result in an association where both formal and informal views would be reciprocally modified. The danger which at all costs should be avoided is that "working with the informal organization" does not degenerate into a shallow disguise for human manipulation.

Some neoclassical writing in organization theory, especially that coming from the management-oriented segment of this school, gives the impression that the formal and informal organizations are distinct, and at times, quite irreconcilable factors in a company. The interaction which takes place between the two is something akin to the interaction between the company and a labor union, or a government agency, or another company.

The concept of the social system is another approach to the interactional climate. While this concept can be properly classified as neoclassical, it borders on the modern theories of organization. The phrase "social system" means that an organization is a complex of mutually interdependent, but variable, factors.

These factors include individuals and their attitudes and motives, jobs, the physical work setting, the formal organization, and the informal organizations. These factors, and many others, are woven into an overall pattern of interdependency.

<sup>27</sup> Probably the classic study of resistance to change is: Lester Coch and John R. P. French, Jr., "Overcoming Resistance to Change," in Schuyler Dean Hoslett (editor) *Human Factors in Management* (New York: Harper and Brothers, 1951) pp. 242-268.

<sup>28</sup> For example see: Robert Saltonstall, *Human Relations in Administration* (New York: McGraw-Hill Book Company, 1959), pp. 330-331; and Keith Davis, *op. cit.*, pp. 99-101.

<sup>29</sup> For an example of this approach see: John T. Doutt, "Management Must Manage the Informal Group, Too," *Advanced Management*, May, 1959, pp. 26-28.

From this point of view, the formal and informal organizations lose their distinctiveness, but find real meaning, in terms of human behavior, in the operation of the system as a whole. Thus, the study of organization turns away from descriptions of its component parts, and is refocused on the system of interrelationships among the parts.

One of the major contributions of the Hawthorne studies was the integration of Pareto's idea of the social system into a meaningful method of analysis for the study of behavior in human organizations.<sup>30</sup> This concept is still vitally important. But unfortunately some work in the field of human relations undertaken by the neoclassicists has overlooked, or perhaps discounted, the significance of this consideration.<sup>31</sup>

The fundamental insight regarding the social system, developed and applied to the industrial scene by the Hawthorne researchers, did not find much extension in subsequent work in the neoclassical vein. Indeed, the neoclassical school after the Hawthorne studies generally seemed content to engage in descriptive generalizations, or particularized empirical research studies which did not have much meaning outside their own context.

The neoclassical school of organization theory has been called bankrupt. Criticisms range from, "human relations is a tool for cynical puppeteering of people," to "human relations is nothing more than a trifling body of empirical and descriptive information." There is a good deal of truth in both criticisms, but another appraisal of the neoclassical school of organization theory is offered here. The neoclassical approach has provided valuable contributions to lore of organization. But, like the classical theory, the neoclassical doctrine suffers from incompleteness, a shortsighted perspective, and lack of integration among the many facets of human behavior studied by it. Modern organization theory has made a move to cover the shortcomings of the current body of theoretical knowledge.

### MODERN ORGANIZATION THEORY

The distinctive qualities of modern organization theory are its conceptual-analytical base, its reliance on empirical research data and, above all, its integrating nature. These qualities are framed in a philosophy which accepts the premise that the only meaningful way to study organization is to study it as a system. As Henderson put it, the study of a system must rely on a method of analysis, ". . . involving the simultaneous variations of mutually dependent variables."<sup>32</sup> Human systems, of course, contain a huge number of dependent variables which defy the most complex simultaneous equations to solve.

Nevertheless, system analysis has its own peculiar point of view which aims to study organization in the way Henderson suggests. It treats organization as a

<sup>30</sup> See: Roethlisberger and Dickson, *op. cit.*, Chapter 24.

<sup>31</sup> A check of management human relations texts, the organization and human relations chapters of principles of management texts, and texts on conventional organization theory for management courses reveals little or no treatment of the concept of the social system.

<sup>32</sup> Lawrence J. Henderson, *Pareto's General Sociology* (Cambridge: Harvard University Press, 1935), p. 13.

system of mutually dependent variables. As a result, modern organization theory, which accepts system analysis, shifts the conceptual level of organization study above the classical and neoclassical theories. Modern organization theory asks a range of interrelated questions which are not seriously considered by the two other theories.

Key among these questions are: (1) What are the strategic parts of the system? (2) What is the nature of their mutual dependency? (3) What are the main processes in the system which link the parts together, and facilitate their adjustment to each other? (4) What are the goals sought by systems?<sup>33</sup>

Modern organization theory is in no way a unified body of thought. Each writer and researcher has his special emphasis when he considers the system. Perhaps the most evident unifying thread in the study of systems is the effort to look at the organization in its totality. Representative books in this field are March and Simon, *Organizations*,<sup>34</sup> and Haire's anthology, *Modern Organization Theory*.<sup>35</sup>

Instead of attempting a review of different writers' contributions to modern organization theory, it will be more useful to discuss the various ingredients involved in system analysis. They are the parts, the interactions, the processes, and the goals of systems.

#### *The Parts of the System and Their Interdependency*

The first basic part of the system is the *individual*, and the personality structure he brings to the organization. Elementary to an individual's personality are motives and attitudes which condition the range of expectancies he hopes to satisfy by participating in the system.

The second part of the system is the formal arrangement of functions, usually called the *formal organization*. The formal organization is the interrelated pattern of jobs which make up the structure of a system. Certain writers, like Argyris, see a fundamental conflict resulting from the demands made by the system, and the structure of the mature, normal personality. In any event, the individual has expectancies regarding the job he is to perform; and, conversely, the job makes demands on, or has expectancies relating to, the performance of the individual. Considerable attention has been given by writers in modern organization theory to incongruencies resulting from the interaction of organizational and individual demands.<sup>36</sup>

The third part in the organization system is the *informal organization*. Enough has been said already about the nature of this organization. But it must be noted that an interactional pattern exists between the individual and the informal group. This interactional arrangement can be conveniently discussed as the mutual modi-

<sup>33</sup> There is another question which cannot be treated in the scope of this paper. It asks, what research tools should be used for the study of the system?

<sup>34</sup> James G. March and Herbert A. Simon, *Organizations* (New York: John Wiley and Sons, 1958).

<sup>35</sup> Mason Haire, (editor) *Modern Organization Theory* (New York: John Wiley and Sons, 1959).

<sup>36</sup> See Chris Argyris, *Personality and Organization* (New York: Harper and Brothers, 1957), esp. Chapters 2, 3, 7.

fication of expectancies. The informal organization has demands which it makes on members in terms of anticipated forms of behavior, and the individual has expectancies of satisfaction he hopes to derive from association with people on the job. Both these sets of expectancies interact, resulting in the individual modifying his behavior to accord with the demands of the group, and the group, perhaps, modifying what it expects from an individual because of the impact of his personality on group norms.<sup>37</sup>

Much of what has been said about the various expectancy systems in an organization can also be treated using status and role concepts. Part of modern organization theory rests on research findings in social-psychology relative to reciprocal patterns of behavior stemming from role demands generated by both the formal and informal organizations, and role perceptions peculiar to the individual. Bakke's *fusion process* is largely concerned with the modification of role expectancies. The fusion process is a force, according to Bakke, which acts to weld divergent elements together for the preservation of organizational integrity.<sup>38</sup>

The fifth part of system analysis is the *physical setting* in which the job is performed. Although this element of the system may be implicit in what has been said already about the formal organization and its functions, it is well to separate it. In the physical surroundings of work, interactions are present in complex man-machine systems. The human "engineer" cannot approach the problems posed by such interrelationships in a purely technical, engineering fashion. As Haire says, these problems lie in the domain of the social theorist.<sup>39</sup> Attention must be centered on responses demanded from a logically ordered production function, often with the view of minimizing the error in the system. From this standpoint, work cannot be effectively organized unless the psychological, social, and physiological characteristics of people participating in the work environment are considered. Machines and processes should be designed to fit certain generally observed psychological and physiological properties of men, rather than hiring men to fit machines.

In summary, the parts of the system which appear to be of strategic importance are the individual, the formal structure, the informal organization, status and role patterns, and the physical environment of work. Again, these parts are woven into a configuration called the organizational system. The processes which link the parts are taken up next.

#### *The Linking Processes*

One can say, with a good deal of glibness, that all the parts mentioned above are interrelated. Although this observation is quite correct, it does not mean too much in terms of system theory unless some attempt is made to analyze the processes by which the interaction is achieved. Role theory is devoted to certain

<sup>37</sup> For a larger treatment of this subject see: George C. Homans, *The Human Group* (New York: Harcourt, Brace and Company, 1950), Chapter 5.

<sup>38</sup> E. Wight Bakke, "Concept of the Social Organization," in *Modern Organization Theory*, Mason Haire, (editor) (New York: John Wiley and Sons, 1959) pp. 60-61.

<sup>39</sup> Mason Haire, "Psychology and the Study of Business: Joint Behavioral Sciences," in *Social Science Research on Business: Product and Potential* (New York: Columbia University Press, 1959), pp. 53-59.

types of interactional processes. In addition, modern organization theorists point to three other linking activities which appear to be universal to human systems of organized behavior. These processes are communication, balance, and decision making.

(1) Communication is mentioned often in neoclassical theory, but the emphasis is on description of forms of communication activity, i.e., formal-informal, vertical-horizontal, line-staff. Communication, as a mechanism which links the segments of the system together, is overlooked by way of much considered analysis.

One aspect of modern organization theory is study of the communication network in the system. Communication is viewed as the method by which action is evoked from the parts of the system. Communication acts not only as stimuli resulting in action, but also as a control and coordination mechanism linking the decision centers in the system into a synchronized pattern. Deutsch points out that organizations are composed of parts which communicate with each other, receive messages from the outside world, and store information. Taken together, these communication functions of the parts comprise a configuration representing the total system.<sup>40</sup> More is to be said about communication later in the discussion of the cybernetic model.

(2) The concept of *balance* as a linking process involves a series of some rather complex ideas. Balance refers to an equilibrating mechanism whereby the various parts of the system are maintained in a harmoniously structured relationship to each other.

The necessity for the balance concept logically flows from the nature of systems themselves. It is impossible to conceive of an ordered relationship among the parts of a system without also introducing the idea of a stabilizing or an adapting mechanism.

Balance appears in two varieties—quasi-automatic and innovative. Both forms of balance act to insure system integrity in face of changing conditions, either internal or external to the system. The first form of balance, quasi-automatic, refers to what some think are "homeostatic" properties of systems. That is, systems seem to exhibit built-in propensities to maintain steady states.

If human organizations are open, self-maintaining systems, then control and regulatory processes are necessary. The issue hinges on the degree to which stabilizing processes in systems, when adapting to change, are automatic. March and Simon have an interesting answer to this problem, which in part is based on the type of change and the adjustment necessary to adapt to the change. Systems have programs of action which are put into effect when a change is perceived. If the change is relatively minor, and if the change comes within the purview of established programs of action, then it might be fairly confidently predicted that the adaptation made by the system will be quasi-automatic.<sup>41</sup>

The role of innovative, creative balancing efforts now needs to be examined. The need for innovation arises when adaptation to a change is outside the scope

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<sup>40</sup> Karl W. Deutsch "On Communication Models in the Social Sciences," *Public Opinion Quarterly*, 16 (1952), pp. 356-380.

<sup>41</sup> March and Simon, *op. cit.*, pp. 139-140.

of existing programs designed for the purpose of keeping the system in balance. New programs have to be evolved in order for the system to maintain internal harmony.

New programs are created by trial and error search for feasible action alternatives to cope with a given change. But innovation is subject to the limitations and possibilities inherent in the quantity and variety of information present in a system at a particular time. New combinations of alternatives for innovative purposes depend on:

- (a) the possible range of output of the system, or the capacity of the system to supply information.
- (b) the range of available information in the memory of the system.
- (c) the operating rules (program) governing the analysis and flow of information within the system.
- (d) the ability of the system to "forget" previously learned solutions to change problems.<sup>42</sup> A system with too good a memory might narrow its behavioral choices to such an extent as to stifle innovation. In simpler language, old learned programs might be used to adapt to change, when newly innovated programs are necessary.<sup>43</sup>

Much of what has been said about communication and balance brings to mind a cybernetic model in which both these processes have vital roles. Cybernetics has to do with feedback and control in all kinds of systems. Its purpose is to maintain system stability in the face of change. Cybernetics cannot be studied without considering communication networks, information flow, and some kind of balancing process aimed at preserving the integrity of the system.

Cybernetics directs attention to key questions regarding the system. These questions are: How are communication centers connected, and how are they maintained? Corollary to this question: what is the structure of the feedback system? Next, what information is stored in the organization, and at what points? And as a corollary: how accessible is this information to decision-making centers? Third, how conscious is the organization of the operation of its own parts? That is, to what extent do the policy centers receive control information with sufficient frequency and relevancy to create a real awareness of the operation of the segments of the system? Finally, what are the learning (innovating) capabilities of the system?<sup>44</sup>

Answers to the questions posed by cybernetics are crucial to understanding both the balancing and communication processes in systems.<sup>45</sup> Although cybernetics has been applied largely to technical-engineering problems of automation, the model of feedback, control, and regulation in all systems has a good deal of generality. Cybernetics is a fruitful area which can be used to synthesize the processes of communication and balance.

<sup>42</sup> Mervyn L. Cadwallader, "The Cybernetic Analysis of Change in Complex Social Organization," *The American Journal of Sociology*, September, 1959, p. 156.

<sup>43</sup> It is conceivable for innovative behavior to be programmed into the system.

<sup>44</sup> These are questions adapted from Deutsch, *op. cit.*, 368-370.

<sup>45</sup> Answers to these questions would require a comprehensive volume. One of the best approaches currently available is Stafford Beer, *Cybernetics and Management* (New York: John Wiley and Sons, 1959).

(3) A wide spectrum of topics dealing with types of decisions in human systems makes up the core of analysis of another important process in organizations. Decision analysis is one of the major contributions of March and Simon in their book *Organizations*. The two major classes of decisions they discuss are decisions to produce and decisions to participate in the system.<sup>46</sup>

Decisions to produce are largely a result of an interaction between individual attitudes and the demands of organization. Motivation analysis becomes central to studying the nature and results of the interaction. Individual decisions to participate in the organization reflect on such issues as the relationship between organizational rewards versus the demands made by the organization. Participation decisions also focus attention on the reasons why individuals remain in or leave organizations.

March and Simon treat decisions as internal variables in an organization which depend on jobs, individual expectations and motivations, and organizational structure. Marschak<sup>47</sup> looks on the decision process as an independent variable upon which the survival of the organization is based. In this case, the organization is viewed as having, inherent to its structure, the ability to maximize survival requisites through its established decision processes.

### *The Goals of Organization*

Organization has three goals which may be either intermeshed or independent ends in themselves. They are growth, stability, and interaction. The last goal refers to organizations which exist primarily to provide a medium for association of its members with others. Interestingly enough these goals seem to apply to different forms of organization at varying levels of complexity, ranging from simple clockwork mechanisms to social systems.

These similarities in organizational purposes have been observed by a number of people, and a field of thought and research called general system theory has developed, dedicated to the task of discovering organization universals. The dream of general system theory is to create a science of organizational universals, or if you will, a universal science using common organizational elements found in all systems as a starting point.

Modern organization theory is on the periphery of general system theory. Both general system theory and modern organization theory studies:

- (1) the parts (individuals) in aggregates, and the movement of individuals into and out of the system.
- (2) the interaction of individuals with the environment found in the system.
- (3) the interactions among individuals in the system.
- (4) general growth and stability problems of systems.<sup>48</sup>

<sup>46</sup> March and Simon, *op. cit.*, Chapters 3 and 4.

<sup>47</sup> Jacob Marschak, "Efficient and Viable Organizational Forms" in *Modern Organization Theory*, Mason Haire, editor, (New York: John Wiley and Sons, 1959), pp. 307-320.

<sup>48</sup> Kenneth E. Boulding, "General System Theory—The Skeleton of a Science," *Management Science*, April, 1956, pp. 200-202.

Modern organization theory and general system theory are similar in that they look at organization as an integrated whole. They differ, however, in terms of their generality. General system theory is concerned with every level of system, whereas modern organizational theory focuses primarily on human organization.

The question might be asked, what can the science of administration gain by the study of system levels other than human? Before attempting an answer, note should be made of what these other levels are. Boulding presents a convenient method of classification:

- (1) The static structure—a level of framework, the anatomy of a system; for example, the structure of the universe.
- (2) The simple dynamic system—the level of clockworks, predetermined necessary motions.
- (3) The cybernetic system—the level of the thermostat, the system moves to maintain a given equilibrium through a process of self-regulation.
- (4) The open system—level of self-maintaining systems, moves toward and includes living organisms.
- (5) The genetic-societal system—level of cell society, characterized by a division of labor among cells.
- (6) Animal systems—level of mobility, evidence of goal-directed behavior.
- (7) Human systems—level of symbol interpretation and idea communication.
- (8) Social system—level of human organization.
- (9) Transcendental systems—level of ultimates and absolutes which exhibit systematic structure but are unknowable in essence.<sup>49</sup>

This approach to the study of systems by finding universals common at all levels of organization offers intriguing possibilities for administrative organization theory. A good deal of light could be thrown on social systems if structurally analogous elements could be found in the simpler types of systems. For example, cybernetic systems have characteristics which seem to be similar to feedback, regulation, and control phenomena in human organizations. Thus, certain facets of cybernetic models could be generalized to human organization. Considerable danger, however, lies in poorly founded analogies. Superficial similarities between simpler system forms and social systems are apparent everywhere. Instinctually based ant societies, for example, do not yield particularly instructive lessons for understanding rationally conceived human organizations. Thus, care should be taken that analogies used to bridge system levels are not mere devices for literary enrichment. For analogies to have usefulness and validity, they must exhibit inherent structural similarities or implicitly identical operational principles.<sup>50</sup>

<sup>49</sup>*Ibid.*, pp. 202-205.

<sup>50</sup> Seidenberg, *op. cit.*, p. 136. The fruitful use of the type of analogies spoken of by Seidenberg is evident in the application of thermodynamic principles, particularly the entropy concept, to communication theory. See: Claude E. Shannon and Warren Weaver, *The Mathematical Theory of Communication*, (Urbana: The University of Illinois Press, 1949). Further, the existence of a complete analogy between the operational behavior of thermodynamic systems, electrical communication systems, and biological systems has been noted by: Y. S. Touloukian, *The Concept of Entropy in Communication, Living Organisms, and Thermodynamics*, Research Bulletin 130, Purdue Engineering Experiment Station.

Modern organization theory leads, as it has been shown, almost inevitably into a discussion of general system theory. A science of organization universals has some strong advocates, particularly among biologists.<sup>51</sup> Organization theorists in administrative science cannot afford to overlook the contributions of general system theory. Indeed, modern organization concepts could offer a great deal to those working with general system theory. But the ideas dealt with in the general theory are exceedingly elusive.

Speaking of the concept of equilibrium as a unifying element in all systems, Easton says, "It (equilibrium) leaves the impression that we have a useful general theory when in fact, lacking measurability, it is a mere pretence for knowledge."<sup>52</sup> The inability to quantify and measure universal organization elements undermines the success of pragmatic tests to which general system theory might be put.

#### *Organization Theory: Quo Vadis?*

Most sciences have a vision of the universe to which they are applied, and administrative science is not an exception. This universe is composed of parts. One purpose of science is to synthesize the parts into an organized conception of its field of study. As a science matures, its theorems about the configuration of its universe change. The direction of change in three sciences, physics, economics, and sociology, are noted briefly for comparison with the development of an administrative view of human organization.

The first comprehensive and empirically verifiable outlook of the physical universe was presented by Newton in his *Principia*. Classical physics, founded on Newton's work, constitutes a grand scheme in which a wide range of physical phenomena could be organized and predicted. Newtonian physics may rightfully be regarded as "macro" in nature, because its system of organization was concerned largely with gross events of which the movement of celestial bodies, waves, energy forms, and strain are examples. For years classical physics was supreme, being applied continuously to smaller and smaller classes of phenomena in the physical universe. Physicists at one time adopted the view that everything in their realm could be discovered by simply subdividing problems. Physics thus moved into the "micro" order.

But in the nineteenth century a revolution took place motivated largely because events were being noted which could not be explained adequately by the conceptual framework supplied by the classical school. The consequences of this revolution are brilliantly described by Eddington:

From the point of view of philosophy of science the conception associated with entropy must I think be ranked as the great contribution of the nineteenth century to scientific thought. It marked a reaction from the view that everything to which science need pay attention is discovered by microscopic dissection of objects. It provided an alternative standpoint in which the centre of interest is shifted from the entities

<sup>51</sup> For example see: Ludwig von Bertalanffy, *Problem of Life* (London: Watts and Company, 1952).

<sup>52</sup> David Easton, "Limits of the Equilibrium Model in Social Research," in *Problems and Problems of Homeostatic Models in the Behavioral Sciences*, Publication 1, Chicago Behavioral Sciences, 1953, p. 39.

reached by the customary analysis (atoms, electric potentials, etc.) to qualities possessed by the system as a whole, which cannot be split up and located—a little bit here, and a little bit there. . . .

We often think that when we have completed our study of *one* we know all about *two*, because "two" is "one and one." We forget that we have still to make a study of "and." Secondary physics is the study of "and"—that is to say, of organization.<sup>10</sup>

Although modern physics often deals in minute quantities and oscillations, the conception of the physicist is on the "macro" scale. He is concerned with the "and," or the organization of the world in which the events occur. These developments did not invalidate classical physics as to its usefulness for explaining a certain range of phenomena. But classical physics is no longer the undisputed law of the universe. It is a special case.

Early economic theory, and Adam Smith's *Wealth of Nations* comes to mind, examined economic problems in the macro order. The *Wealth of Nations* is mainly concerned with matters of national income and welfare. Later, the economics of the firm, micro-economics, dominated the theoretical scene in this science. And, finally, with Keynes' *The General Theory of Employment Interest and Money*, a systematic approach to the economic universe was re-introduced on the macro level.

The first era of the developing science of sociology was occupied by the great social "system builders." Comte, the so-called father of sociology, had a macro view of society in that his chief works are devoted to social reorganization. Comte was concerned with the interrelationships among social, political, religious, and educational institutions. As sociology progressed, the science of society compressed. Emphasis shifted from the macro approach of the pioneers to detailed, empirical study of small social units. The compression of sociological analysis was accompanied by study of social pathology or disorganization.

In general, physics, economics, and sociology appear to have two things in common. First, they offered a macro point of view as their initial systematic comprehension of their area of study. Second, as the science developed, attention fragmented into analysis of the parts of the organization, rather than attending to the system as a whole. This is the micro phase.

In physics and economics, discontent was evidenced by some scientists at the continual atomization of the universe. The reaction to the micro approach was a new theory or theories dealing with the total system, on the macro level again. This third phase of scientific development seems to be more evident in physics and economics than in sociology.

The reason for the "macro-micro-macro" order of scientific progress lies, perhaps, in the hypothesis that usually the things which strike man first are of great magnitude. The scientist attempts to discover order in the vastness. But after macro laws or models of systems are postulated, variations appear which demand analysis, not so much in terms of the entire system, but more in terms of the specific parts which make it up. Then, intense study of microcosm may result in

<sup>10</sup> Sir Arthur Eddington, *The Nature of the Physical World* (Ann Arbor: The University of Michigan Press, 1958), pp. 103-104.

new general laws, replacing the old models of organization. Or, the old and the new models may stand together, each explaining a different class of phenomenon. Or, the old and the new concepts of organization may be welded to produce a single creative synthesis.

Now, what does all this have to do with the problem of organization in administrative science? Organization concepts seem to have gone through the same order of development in this field as in the three just mentioned. It is evident that the classical theory of organization, particularly as in the work of Mooney and Reiley, is concerned with principles common to all organizations. It is a macro-organizational view. The classical approach to organization, however, dealt with the gross anatomical parts and processes of the formal organization. Like classical physics, the classical theory of organization is a special case. Neither are especially well equipped to account for variation from their established framework.

Many variations in the classical administrative model result from human behavior. The only way these variations could be understood was by a microscopic examination of particularized, situational aspects of human behavior. The mission of the neoclassical school thus is "micro-analysis."

It was observed earlier, that somewhere along the line the concept of the social system, which is the key to understanding the Hawthorne studies, faded into the background. Maybe the idea is so obvious that it was lost to the view of researchers and writers in human relations. In any event, the press of research in the microscopic universes of the informal organization, morale and productivity, leadership, participation, and the like forced the notion of the social system into limbo. Now, with the advent of modern organization theory, the social system has been resurrected.

Modern organization theory appears to be concerned with Eddington's "and." This school claims that its operational hypothesis is based on a macro point of view; that is, the study of organization as a whole. This nobility of purpose should not obscure, however, certain difficulties faced by this field as it is presently constituted. Modern organization theory raises two questions which should be explored further. First, would it not be more accurate to speak of modern organization theories? Second, just how much of modern organization theory is modern?

The first question can be answered with a quick affirmative. Aside from the notion of the system, there are few, if any, other ideas of a unifying nature. Except for several important exceptions<sup>54</sup> modern organization theorists tend to pursue their pet points of view,<sup>55</sup> suggesting they are part of system theory, but not troubling to show by what mystical means they arrive at this conclusion.

The irony of it all is that a field dealing with systems has, indeed, little system. Modern organization theory needs a framework, and it needs an integration of issues into a common conception of organization. Admittedly, this is a large order. But it is curious not to find serious analytical treatment of subjects like cybernetics or general system theory in Haire's, *Modern Organizational Theory* which claims

<sup>54</sup> For example: E. Wight Bakke, *op. cit.*, pp. 18-75.

<sup>55</sup> There is a large selection including decision theory, individual-organization interaction, motivation, vitality, stability, growth, and graph theory, to mention a few.

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to be a representative example of work in this field. Beer has ample evidence in his book *Cybernetics and Management* that cybernetics, if imaginatively approached, provides a valuable conceptual base for the study of systems.

The second question suggests an ambiguous answer. Modern organization theory is in part a product of the past; system analysis is not a new idea. Further, modern organization theory relies for supporting data on microcosmic research studies, generally drawn from the journals of the last ten years. The newness of modern organization theory, perhaps, is its effort to synthesize recent research contributions of many fields into a system theory characterized by a reoriented conception of organization.

One might ask, but what is the modern theorist reorienting? A clue is found in the almost snobbish disdain assumed by some authors of the neo-classical human relations school, and particularly, the classical school. Re-evaluation of the classical school of organization is overdue. However, this does not mean that its contributions to organization theory are irrelevant and should be overlooked in the rush to get on the "behavioral science bandwagon."

Haire announces that the papers appearing in *Modern Organization Theory* constitute, "the ragged leading edge of a wave of theoretical development."<sup>56</sup> Ragged, yes; but leading no! The papers appearing in this book do not represent a theoretical breakthrough in the concept of organization. Haire's collection is an interesting potpourri with several contributions of considerable significance. But readers should beware that they will not find vastly new insights into organizational behavior in this book, if they have kept up with the literature of the social sciences, and have dabbled to some extent in the esoteria of biological theories of growth, information theory, and mathematical model building. For those who have not maintained the pace, *Modern Organization Theory* serves the admirable purpose of bringing them up-to-date on a rather diversified number of subjects.

Some work in modern organization theory is pioneering, making its appraisal difficult and future uncertain. While the direction of this endeavor is unclear, one thing is patently true. Human behavior in organizations, and indeed, organization itself, cannot be adequately understood within the ground rules of classical and neo-classical doctrines. Appreciation of human organization requires a *creative* synthesis of massive amounts of empirical data, a high order of deductive reasoning, imaginative research studies, and a taste for individual and social values. Accomplishment of all these objectives, and the inclusion of them into a framework of the concept of the system, appears to be the goal of modern organization theory. The vitality of administrative science rests on the advances modern theorists make along this line.

Modern organization theory, 1960 style, is an amorphous aggregation of synthesizers and restaters, with a few extending leadership on the frontier. For the sake of these few, it is well to admonish that pouring old wine into new bottles may make the spirits cloudy. Unfortunately, modern organization theory has almost succeeded in achieving the status of a fad. Popularization and exploitation

<sup>56</sup> Mason Haire, "General Issues," in Mason Haire (editor), *Modern Organization Theory* (New York: John Wiley and Sons, 1959), p. 2.

contributed to the disrepute into which human relations has fallen. It would be a great waste if modern organization theory yields to the same fate, particularly since both modern organization theory and human relations draw from the same promising source of inspiration—system analysis.

Modern organization theory needs tools of analysis and a conceptual framework uniquely its own, but it must also allow for the incorporation of relevant contributions of many fields. It may be that the framework will come from general system theory. New areas of research such as decision theory, information theory, and cybernetics also offer reasonable expectations of analytical and conceptual tools. Modern organization theory represents a frontier of research which has great significance for management. The potential is great, because it offers the opportunity for uniting what is valuable in classical theory with the social and natural sciences into a systematic and integrated conception of human organization.

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# *Logical Analysis and Executive Performance*

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## INTRODUCTION

The functions of the executive can be grouped into two general categories. One involves action duties performed through personal contact or communication: leadership, initiation, decision, direction, control, motivation, guidance, inspection, or representation. This operational activity may relate to production, sales, corporate-legal affairs, personnel, public relations, facilities, or any one of a dozen areas of executive concern. The other encompasses responsibilities of an analytical nature requiring careful study: for example, determination of long-range objectives, corporate organization, financial structure and tactics, new product research, or competitive strategies.

Of course, these two categories of activity are by no means mutually exclusive and may be directed toward the same general purposes, but the first emphasizes action, the second analytical thought. One requires the executive to "get up and go" or otherwise act quickly; the other calls for him to "sit down and think" constructively, so he can formulate or approve a solution to a difficult problem, a fundamental policy or strategy, or a longer-range plan for the business. One is extrovertive and more immediate in its emphasis, the other introvertive and longer-range.<sup>1</sup>

## ANALYSIS AND EXECUTIVE PERFORMANCE

The analytical responsibilities of management become more crucial as business and the socio-economic contexts within which it operates becomes organizationally and technically more complex. Many matters which in times past were

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\* This firm engages in research development and production of precision parts and systems in the electronics, missiles, space, aircraft, and automotive fields. The article is an excerpt from a more detailed paper.

<sup>1</sup> Improvements in analytical method and its increasing application to business affairs are clearly evident in the recent literature. E.g., among the publications of the American Management Association are Felix E. Larkin, "Long-Range Planning at W. R. Grace and Co.," *Management Report No. 3*, 1958, pp. 54-60; Paul V. Manning, "Long Range Planning for Product Research," *Research and Development Series No. 4*, 1957, pp. 54-57; and "Return on Investment—Tool of Modern Management," *Improved Tools of Financial Management*, 1956. See also H. I. Ansoff, "Strategies for Diversification," *Harvard Business Review*, Vol. 35, No. 5, September-October 1957, pp. 113-124.

appraised quite easily, now require extensive analysis. Witness the enormous increase in tax and other data for various governmental purposes incorporated by business in its operational reporting and influencing most corporate decisions. And as the different aspects of business become more interdependent, maintaining an integrated picture of the company as a whole becomes more difficult, and subject to interpretation, judgment, intent, and statistical subtlety.

New analytical mechanisms are being applied and developed in business. Even today, some executives are called upon to decide between strategies of acquisition expressed in matrix form, choose among different inventory policies derived by linear programming, adopt sales projections developed from multiple-probability assumptions, determine the practical significance of the results of the psychological interview of several executive candidates, or approve research expenditures toward a new product recommended because of estimates of the state of a technical art and scientific sampling of opinion. This type of evaluation employing quantification, mathematics, statistics, and scientific method will be more prevalent in the future.<sup>2</sup>

It is possible to present only the final factual results or conclusions of analysis to the executive for review and decision. But if he does not understand in general the reasoning, methodology, and judgments underlying these results which reach his desk in highly distilled form, he cannot make an intelligent decision. Unless he has sufficient background knowledge to appraise the material critically by asking appropriate questions, he cannot test its accuracy or inclusiveness, request corrections, or suggest constructive improvement. Without this minimum comprehension, he is in effect making decisions half blindly. For him to delegate all analytical decisions to others would, of course, constitute a serious abrogation of his basic responsibility.

At the present time, scientific method can only be applied piecemeal in corporate planning. There are many elements of the business at this level which cannot be quantified reliably, such as employee morale, the success of public relations, most legal situations, or the value of research and development. Even in financial accounting and analysis, with its relatively high degree of quantification attained over the years, there are many aspects as subject to interpretation and subjective judgment as they are to precise calculation. For example, the return on investment of money spent for staff and other indirectly supportive activities cannot be determined with anything approaching the accuracy possible for the direct inputs-outputs of manufacturing.

Although conducted differently by different professional personnel, the diverse elements of a business comprise a single corporate entity or system. A method of comparative measurement which would overcome some of the well-known limitations of the monetary unit (the dollar) would permit a level of analysis now

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<sup>2</sup> Cf. Franklin A. Lindsay, *New Techniques for Management Decision Making*, New York (McGraw-Hill Consultant Reports on Current Business Problems), 1958; A. Charnes and W. W. Cooper, "Management Models and Industrial Applications of Linear Programming," *Management Science*, Vol. 4, No. 1, October, 1957, pp. 38-91.

impossible. Since a business organism is constantly changing, a primary value of all analysis is as a basis for projection; even the closing of last year's books is as useful for what it suggests for the future as the legal-operating record it provides. But our methods of applying scientific method to business projections are quite limited. Techniques are needed for coping with constant and unequal change, for determining over-all or composite probabilities.

Because of such limitations, many of the most vital corporate concerns are decided mainly on the basis of subjective judgment and analysis. For some time to come, it will not be possible or practical to calculate numerically the optimum course of action for such important matters as choice among investment alternatives, long-range strategy of diversification, program of research expenditures, improved personnel policies, or the initiation of foreign operations.<sup>3</sup>

### INTUITION AND SUBJECTIVE APPRAISAL

The time-honored methods of subjective appraisal rely on personal experience. To an extent varying widely with the individual and business situation, the executive may perform his own analytical examination and calculation in reaching his conclusions. More often, he depends on intuitive reaction and discernment. If presented with several alternatives, he is more likely to choose one of these specific recommendations than perceive or develop a synthesis solution perhaps preferable from his vantage point to any of the choices submitted. He may consider he does not have the time to resolve the problem himself, believe this can and will be done by others, or is disinclined to spend the time and effort required if he is constitutionally more oriented toward action than analysis. In any event, unless he accepts without question facts, figures, and conclusions as presented to him, he must make some form of quick analytical check for approximate accuracy and content.

Some executives prefer to manufacture logical reasons in an attempt to underpin the intuitive judgment which alone can produce a decision when there is nothing sufficiently definite to analyze meaningfully, or when there is not enough time for conclusive study. And yet, because the greater portion of the mind exists below the surface of immediate consciousness, intuition is far from chance. What is actually occurring is an unconscious or semiconscious utilization of a large mental reservoir which cannot be directly or deliberately tapped; but this accumulation of "forgotten" experiences, conclusions, facts, figures, and impressions absorbed throughout the years is applied nevertheless through intuition. Furthermore, the unconscious mind performs a high degree of effective synthesis between different or conflicting experiences.

<sup>3</sup> Cf. Ernest H. Weinwurm, "Limitations of the Scientific Method in Management Science," *Management Science*, Vol. 3, No. 3, April 1957, pp. 225-233; Peter F. Drucker, "Management Science and the Manager," *ibid.*, Vol. 1, No. 2, January, 1955, pp. 115-126; and *Operations Research Reconsidered—Some Frontiers and Boundaries of Industrial OR*, American Management Association Report No. 10, 1958, 143 pp.

The practical value of this intuitive judgment depends on the condition of what might be called the circuitry of the unconscious mind. Significantly crossed emotional wires can short-circuit the mental "computer" in its process of intuitive resolution, and produce a false or uniformly biased answer—not necessarily from the personal point of view of the individual who thinks and acts as he does for some compelling reason, but because judgments in the best interest of an institution require as much objectivity as possible. For most businessmen, the condition of his intuitive circuitry is best evaluated by the *post facto* batting average of the sound conclusions it produces and by comparison with other intuitive minds of proven capability. Unfortunately, it is difficult for most of us to admit or even recognize a low batting average in this respect and limit or check our intuitive judgments accordingly.<sup>4</sup>

#### ANALYTICAL LIMITATIONS OF THE HUMAN MIND

Although the human mind is a remarkable organism with impressive capabilities, it performs some mental functions less well than others. These relate to what may be described briefly as: scan, correlation, and abstraction.

Most persons do not consciously scan a situation in all important aspects to identify its many different elements and considerations. The frequent assumption that this awareness is widespread ignores our innate tendency to focus on those aspects with which we are most familiar through experience and professional concentration, or toward which we are oriented by our mental-emotional personalities.<sup>5</sup> For most people, the comprehensive view requires deliberate effort or special stimulation. We are also limited in the number of successive correlations we can follow without becoming lost. For example, deriving the outcome of a succession of many different conditional interrelationships is impossible without mathematical knowledge. Confronted with a relatively simple sequence, such as, if  $A \leq B$ ,  $C \geq A$ ,  $D > B$ , and  $C < D$ , most of us cannot readily derive the relation between A and D. In general, we can retain only a very few elements simultaneously in our minds, resolve their respective interrelationships, and determine their combined effect.<sup>6</sup> The average person is also limited in his capability to comprehend and manipulate abstractions. Our inherent preference is for real-life, concrete images rooted in the vast unconscious storage of experiences we have observed directly. In contrast, a characteristic of analytical method is its dependence on

<sup>4</sup> See Melville C. Branch, Jr., "Psychological Factors in Business Planning," *Journal of the American Institute of Planners*, Vol. XXII, No. 3, Summer 1956, pp. 174; Eugene Randsepp, "Can You Trust Your Hunches—The Role of Intuition in Executive Decision-Making," *Management Review*, Vol. XLIX, No. 4 American Management Association, April 1960, pp. 4-9, 73-76.

<sup>5</sup> Insights into the relationship between individual psychology, career selection, and professional performance are provided by Lawrence S. Kubie, M.D., in "Some Unsolved Problems of the Scientific Career," *American Scientist*, Vol. 41, No. 4, October, 1953, pp. 596-613.

<sup>6</sup> E.g. George A. Miller, "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information," *The Psychological Review*, Vol. 63, No. 2, March 1956, pp. 81-97.

abstraction. Unfortunately, the analytical appraisal increasingly essential in executive business decisions involves these very mental activities we perform less effectively.

In time, our capacity to scan, correlate, and deal with abstractions may improve with educational advances, the effects of our ever-changing environment, and continued evolutionary development of the human mind itself. We know how readily children absorb new concepts with which their parents have great difficulty. It is possible that entirely new methods of conceptualization and analysis may be found which will extend those areas in which we are now cognitively relatively weak. But since we can hardly wait for evolution or an uncertain intellectual breakthrough, we must rely at least for some time to come on those aids to our mental functioning now available; and perhaps it is the more efficient utilization of these which will most likely trigger some significant methodological advance.

In our current fascination with the electronic computer, we may be neglecting to employ fully the capabilities of the most impressive cognitive device of all—the intelligent human mental-nervous system. Coupled with intuition, logical analysis is a powerful tool of subjective judgment.<sup>7</sup>

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<sup>7</sup>In an invited presentation before the Institute of Management Science's College of Planning, at Los Angeles, California on September 12, 1960, the author elaborated upon the prerequisites to logical analysis and discussed some means and methods that might be employed as an aid to logical reasoning. The article above is an excerpt from this presentation.

## New Journals Announced

The first issue of *The Quarterly Review of Economics and Business* appeared in February 1961. The new journal, published by the Bureau of Economic and Business Research, University of Illinois, succeeds the quarterly *Current Economic Comment*, publication of which terminated with the November 1960 issue. The editor, Professor Marvin Frankel, plans to publish material that reflects scholarship and mature judgment and yet is accessible to the non-specialist as well as the specialist reader.

*Conflict Resolution* was founded in 1957 by the Center for Research on Conflict Resolution at the University of Michigan. Hoping to complement the work of lawyers, merchants, military men, and other professionals in the field of international relations, this journal brings together the ideas of sociologists, psychologists, educators, and other behavioral scientists interested in this important area. The journal aims to stimulate a new approach in the formulation and testing of theoretical models related to the central problem. It is also interested in the improvement of the information processes in this area through quantification, index numbers, or other means.

*Behavioral Science* is an interdisciplinary quarterly journal founded in 1956. It publishes articles on general theories of behavior and on empirical research specifically oriented toward such theories. An interdisciplinary approach to problems of behavior is stressed. In addition to articles, regular features include book reviews, abstracts of current literature with interdisciplinary implications, and a special department called "Computers in Behavioral Science," where articles related to computer usage, computer program abstracts, and news items relating to individuals and organizations in the behavioral sciences who are using computers are published. This journal is published by the Mental Health Research Institute, the University of Michigan, Ann Arbor, Michigan.

*Management International* is published six times a year, and was founded in 1961. It publishes articles in four languages—English, French, German and Italian. Each article is published in the language chosen by its author, if this is not English, and also in English. A summary of about one third of the original length will appear in a remaining language. The purpose of *Management International* is to serve as a medium of exchange between practicing managers and research workers. It is devoted mainly to the nature and solution of management problems of business enterprise, public authorities and other large scale institutions. It will give particular attention to ideas in the field of management education. Further information may be obtained from: Professor Adolph E. Grunewald, Secretary-Treasurer, Management International, Graduate School of Business Administration, Michigan State University, East Lansing, Michigan.

# *The Universality of American Management Philosophy*

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and

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There is a growing interest among scholars and executives in international business management. With increasing frequency books and articles dealing with international management are appearing on the market. Titles like these indicate the scope and direction of these publications: *Management Guide to Overseas Operations*, *The Executive Overseas*, *Management of International Operations*, *Management in the Industrial World*. Recently two new periodicals have appeared: *The International Executive*, and *Management International*.

Initially the viewpoint of writers in this field was the viewpoint of the stateside manager who had supervisory responsibility over the overseas operation. Harbison and Myers have portrayed the characteristics of national managers abroad, functioning in their own cultures.<sup>1</sup> More recently, writers have turned to the problems of the American manager serving overseas with his company's foreign branch or subsidiary. This change of emphasis is appropriate. Since the end of World War II the involvement of U.S. professional management in the economies of the world has increased enormously. U.S. international business operations no longer involve predominantly the stateside export manager, but rather involve the U.S. executive as entrepreneur, as politician, as professional administrator in a culture and economy foreign to his own.

These U.S. expatriate executives find themselves in contrasting decision-making environments, dealing with problems foreign to their stateside experience. Aspects of these contrasting environments call into question the applicability of the U.S. managerial approach to certain business problems. The thesis of this article, based on the authors' two-year study of American management in South America, is that (1) there is a uniquely American management philosophy, an American approach to business management, and (2) this unique American philosophy is a special case, limited in applicability to economies and cultures comparable to that of the United States.

## THE AMERICAN PHILOSOPHY OF MANAGEMENT

Within the structure of American management there are elements of numerous philosophies. However, the public avowals of business leaders, the policy state-

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<sup>1</sup> Frederick Harbison and Charles A. Myers, *Management in the Industrial World*, New York, McGraw-Hill Book Company, Inc., 1959.

ments of American firms, and the writings of those who concern themselves with management science provide a common thread of ideas which embody contemporary American management philosophy. This philosophy is comprised of a system of attitudes, approaches, precepts, broad guide lines, principles and values by reference to which the American businessman deals with business problems.

American managers have this philosophy in common. It is deeply ingrained in their thinking and apparent in their actions. They hold this philosophy in common because they are, to a greater or lesser extent, products of a common American ethic and a common social and economic structure.

The uniqueness of this philosophy is apparent to anthropologists and sociologists who study contrasting cultures. It is increasingly apparent to American management personnel who serve their parent company overseas and find themselves in a contrasting environment. The great bulk of U.S. investment abroad is in the underdeveloped nations of the world, where economies and cultures are least like that of the U.S. The bulk of this investment involves firms which had little if any overseas investment 30 years ago.

The U.S. today occupies the place of eminence in the world of international enterprise which Britain occupied in 1913. But whereas the British export was largely financial, the American export is also technological, entrepreneurial, and particularly managerial. Whereas the British investor was the wealthy English individual, the U.S. investor abroad today is the large American business enterprise. The export is a package including equipment, funds, international market connections, and technological and managerial know-how—a small replica of the stateside enterprise. The managers who accompany this package abroad are professional American managers, products of the U.S. culture, imbued with the American managerial philosophy, and dedicated to their parent firm's particular set of policies and standards.

Management principles have relevance in a total social framework. When a new American professional manager arrives at his post abroad he soon learns that the propriety of his approach to many management problems is questioned alike by his more experienced American manager predecessors, by his subordinates, and by his counterpart national businessmen.

That there are contrasts in the American manager's decision-making environment abroad cannot be denied. Let us examine these contrasts briefly.

The contrasts in the American manager's decision-making environment abroad readily fall into two categories: (1) those which arise out of the contrasting state of economic development—chiefly the state of industrialization of the country, and (2) those which can be attributed to the culture of the country. By definition, the underdeveloped and developing nations present a contrasting physical-facilitative environment within which the overseas manager must operate. There results what may be termed mechanical problems for the overseas operation. These contrasts are examined below approximately in the order in which the manager might encounter them when setting up the overseas enterprise.

### THE DECISION ENVIRONMENT AND THE STATE OF DEVELOPMENT

There is initially the task of deciding the nature and scope of the operations, a task made difficult because of a general lack of basic economic information which is both timely and reliable. Market research services are lacking. Where the product is new or different in some respect there is little basis for estimating product acceptance or the limits of the market. Often the smallest unit of production capacity far exceeds demands of the local market. A seamless tube mill, for example, was set up in a Latin American country to supply the newly expanded automotive industry. Mill capacity of a few hours a day could provide that industry's requirement. The firm had to expand the scope of operations to include forming and preparation of tube assemblies, a phase of operations not originally planned.

Anticipating the promotion and distribution of the product, the American manager will learn that conventional appeals, channels of communication and distribution, are different. An anticipated nation-wide market may be restricted to a single city because of the absolute absence of transportation facilities. The sales effort required to enlarge the market may depend on the efforts of a widely scattered sales force only slightly controllable by the home office.

Once the decision to operate abroad at a given scale is made, the next question is one of providing the product. It can be imported, in which case the manager may face staggering red tape, documentation, petty bribery, and most frequently, the disinclination of the host government to allow or encourage importation of finished products into the country. The subsidiary must go into the local money market to pay for the imported goods and is met with restrictions designed to regulate the manner in which typically short dollar supplies may be allocated. An additional problem may stem from the inflation which plagues many underdeveloped nations. Manipulated, multiple and special-category exchange rate structures make it extremely difficult for the American to plan an orderly flow of importations and to control his inventories as he can in the United States. Any disparity between price and exchange rate levels renders inventory management a speculative, if not a gambling, process.

If, on the other hand, the decision is made to set up physical plant facilities, other contrasts are faced. Building materials, methods, and specifications will differ. Equipment must generally be imported with the problem of securing permission and arranging conditions under which the equipment will be valued, taxed, and later replaced. To an increasing degree, Americans are using equipment which is not of U.S. design and manufacture because of unfavorable cost and tariff structures which exist between the U.S. and the host country.

The maintenance of the plant and equipment presents a major problem to operating managers. Workers are not maintenance minded and typically lack an awareness of the value of equipment. Facilities for repair parts and specialized maintenance service are not available. Climatic conditions often result in accelerated wear of equipment.

Staffing the manufacturing operation is a further study in contrasts. The labor market cannot supply the variety of specialized skills needed for operations and

administration. The labor force is relatively unskilled, immobile, and not always susceptible to motivations which American managers employ. The relationships between worker and manager may be carried on within a labor organization which is in reality an agency of the federal government. Not only might wages and working conditions be prescribed by law, but measures to insure the security of workers go far beyond those known to Americans.<sup>2</sup> The writers learned that nationals employed by U.S. firms privately consider their working conditions and treatment to be superior to conditions in national firms. These workers, however, are not prone to make these feelings known publicly in the face of an official union position to the contrary.

For many middle and upper managerial positions the American subsidiary will have to recruit from the ranks of the parent company with all the attendant problems of selecting and transferring personnel. The nature of a mixed and stratified staff will in many cases lead to misunderstanding on the part of the nationals employed by the subsidiary. Few companies thus engaged seem to plan for the orderly staffing of the subsidiary and few are aware of the personal problems faced by the newly assigned managers.

As frequently happens, the subsidiary is part of the parent firm's international division. However, the manufacturing operations are typically staffed directly from the stateside manufacturing organization. Less autonomy for the local management results. The production executives find it necessary to communicate with the home plant for numerous engineering changes and approval to substitute or modify components. In some cases final inspection approval must be forthcoming from the home office for each production run.<sup>3</sup> The division of final authority between the international and the domestic divisions of the home firm, plus the difficulty of communicating at great distances complicates the subsidiary manager's role.

Of all contrasts, perhaps the legal-financial setting is the sharpest. Here the American is most aware that he is operating in a foreign country. He will tend to find the money market poorly developed as a regular source of funds. This becomes important wherever the local government imposes limits on the amount of outside capital which may be brought in, or where there are provisions that a given percentage of the total capitalization shall be held by nationals in the host country. Assuming the prevalent condition of inflation, there is little incentive to defer consumption and save in order to make funds available for long term investment. There is a propensity to view with favor non-industrial investments, as for example, land and construction.

<sup>2</sup> The indemnification laws, common in most Latin American countries, virtually prevent discharge of an employee after 10 years continuous service. The result is an almost automatic discharge before an employee attains this favored position. Turnover is relatively greater and the American concepts of seniority and longevity are unknown. U.S. executives for the most part maintain that they are not influenced by these indemnification laws. In many cases the subsidiaries have yet to face up to the problem because of the relative newness of operations.

<sup>3</sup> Eli Lilly and Company of Brazil is a typical case. Samples of all new products must be submitted to the parent firm for assay and authorization to manufacture—a time-consuming procedure.

Most capital markets in the developing economies sharply limit their operations geographically and do not provide the information or services to which the American business man is accustomed. Consequently the American will either attempt to bring in funds from the parent company which will be subject to local government regulation, or he will solicit funds from individuals or the government of the host country. The latter source may be significant. It is not uncommon to be in partnership with the government which may have extended an initial invitation or which may have solicited foreign investment under one of a myriad of developmental agencies which exist in most of these countries.

The legal framework of the host country poses further contrast. Included are widely differing laws of incorporation and liability, employer-employee relations, workers' compensation and indemnification, income tax and accounting procedures as well as the multiple rulings of the quasi-legislative-executive agencies of the federal and local governments. These commonly treat such matters as foreign exchange, export-import licensing, economic planning, and the numerous specialized efforts to encourage specific types of economic development, monetary and fiscal control and the tariff. Interestingly it is in the legal area where the Americans must learn rapidly to work with local counsel. The subsidiary in many cases cannot be represented by stateside counsel who have no standing before the Latin American bar.

All of the above are superimposed upon a framework of differing political-governmental institutions. To the degree that these reflect cultural contrasts they are treated later on. However the economic goals of host governments lead them to play an ever increasing role in the business area. The American will find his traditional role as a decision-maker curtailed. In many cases the growth of the subsidiary will be dictated, encouraged or discouraged by direct government action.

Finally there are those contrasts still reflecting the differences due to the state of economic development, which are seen in the under-developed state of many of the supporting economic institutions which the American assumes to be part of the business environment. These include banking services and the banking system itself, commercial credit facilities, a sophisticated communications and distribution system, and perhaps the lack of an attitude of professionalism among those who engage in business activity. The list is scarcely exhaustive.

#### THE DECISION ENVIRONMENT AND CONTRASTING CULTURES

The under-developed nations of the world have in common many economic, cultural and political characteristics which stand in contrast to U.S. society. Most of these nations have little tradition of personal freedom as do Americans and they strive for it today far less than they strive for desirable national attributes such as economic well-being, social order, prestige, and power. Perhaps today more than any time in recent decades they are willing to forego many of their present freedoms with the hope that by so doing they can achieve more desirable material advances.

It is frequently suggested that the economies of these nations are comparable to that of the U.S. seventy-five years ago. Their productive wealth is in the hands of the aristocratic few, who feel little obligation in the way of public service.

These same aristocratic owners tend to be the political leaders of their countries, to own the newspapers and radio broadcasting systems, and to be molders if not makers of public opinion. They view a truly free market with suspicion. In a way they are in the "public be damned" stage of business leadership.

As already indicated, these economies are characterized by a great want of personal devotion to saving. This is due in part to the lack of an ethical tradition which placed great premium on hard work and frugality as virtues. But it is due in larger part today to inflation whose toll in decreased purchasing power makes saving illogical.

These nations tend to be afflicted with a reluctance to cooperate; there is wanting a network of compatible, cooperating institutions which serve to unify social activities and to provide the economic framework within which the talents and energies of the entrepreneur can be challenged and utilized for the benefit of all. There is a lesser disposition to respect the law, to conform to the rules in the interests of order, progress, and efficiency. The great majority of American executives with whom the authors came in contact in South America viewed this as a difficult and serious problem in everyday business affairs. The American manufacturer who endeavors to comply with laws, to pay taxes and conform to prescribed employment rules is at a decided disadvantage among competitors whose culture attaches little importance to ethical business conduct.

There is a difference in temperament. Distrust, relatively, seems to be a national heritage. Americans tend to organize and conduct their lives in society on the assumption that most people can be trusted. Abroad, distrust is particularly manifest towards strangers and those who are not of the social elite. This helps explain the foreign national's preference for doing business with those whom he knows as intimate friends. Factors such as terms, quality, service, and price tend to be cast aside in favor of personal contacts when important dealings are made. This same preference for intricate, individual, and personal relationships accounts for the fact that political parties are thought of and dealt with not as institutions but in terms of the identity of their strong authoritarian leaders. It is not the party, the business organization, the educational institution, the foundation or the government to which one owes allegiance, but rather the personality of the leader.

Failure to recognize this has resulted in costly blunders for some American firms abroad. In 1958 the American Can Company's entry into the Brazilian market was set back several years by well organized public manifestations of hostility. The company had cleared its proposed program of container manufacture with the appropriate Brazilian government agency. But in advertising its proposed program as a boon to the economy of Brazil it failed to reckon with the susceptibility of the Brazilian people to allegiance with a favored Brazilian family: The Matarazzos. The mass of public opinion was much less responsive to American Can's offer of additional production capacity, greater competition, more and better customer service than they were to organized sympathy for the Matarazzo interests. Economic abstractions meant much less than did damage to the personal interests of the empire which bore a well-known name.

Thus the Matarazzo container monopoly which bore partial responsibility for Brazil's inability to feed itself was able to continue without competition for another few years.

In summary, the American tends to assume a free economy in which business is aware of its service obligation. Competition is advocated and it is assumed that people can generally be trusted to so govern themselves as to promote a larger social purpose. In contrast, people in the underdeveloped areas of the world assume that a free economy is not entirely trustworthy, that government by strong individuals who can be expected to grow rich in office is the norm, and that manifestation of concern for the masses is to be viewed with suspicion.

### THE APPROPRIATENESS OF AMERICAN MANAGEMENT PHILOSOPHY ABROAD

Management is both science and art. That portion of the managerial function which is susceptible to the application of scientific principles is ever increasing. The science of management has reached its highest state of development in the U.S., and it is for this knowledge, this know-how, that American management is most highly respected abroad. Transferred abroad, this know-how is first viewed with skepticism. Foreign national employees and partners are slow to respond and understand the American scientific approach to management problems. However, once fully indoctrinated they accept and support this way of doing things. The superiority of this more objective, systematic, orderly and controlled approach to problems is seen and accepted. For the host country, for American international relations, and for the American parent firm itself the export of American managerial know-how as well as technological know-how has yielded great dividends.

Our claim that management can be scientific is thus supported by the evident universality of this aspect of managerial know-how. But all aspects of the American approach to management are not universally respected abroad and in the adaptations which successful American managers make to a foreign environment there is evidence of a lack of universality in contemporary American management philosophy. That aspect of management which lacks universality has to do with interpersonal relationships, including those between management and workers, management and suppliers, management and the customer, the community, competition and government.

Those writers who deal most extensively with managerial philosophy have dealt most intensively with management-employee relations. In the field of international management this pattern has been maintained. Thus Fayerweather and Harbison and Myers, in discussing management abroad, emphasize management-employee relations.<sup>4</sup> Fayerweather deals chiefly with American management and employee relations in foreign countries while Harbison and Myers deal with contrasting

<sup>4</sup> John Fayerweather, *The Executive Overseas, and Management of International Operations*; Frederick Harbison and Charles A. Myers, *op. cit.*

relations between management and employees in their own countries throughout the world. But management philosophy involves more than a philosophy of management and labor relations. As Professor R. C. Davis has suggested, a management philosophy can and should supply the basis for a broader range of management problems.<sup>5</sup>

A complete philosophy of management involves all managerial relationships and is based on broad and fundamental tenets. The American philosophy is closely associated with the American ideal which places great emphasis on personal freedom, the rights of private property, the sanctity of contract and the stewardship or service responsibility of those in positions of leadership. It tolerates a limited degree of government regulation but relies primarily on competitive market forces in a free economy to exercise control. It assumes that individual initiative, given the opportunity to seek self-aggrandizement, will manifest itself for the common good. It professes belief in the Protestant ethic, subscribing to the virtues of hard work and thrift.

Yet these are abstract concepts, and the complete managerial philosophy also depends for its identity on the way in which these concepts are applied to the solution of business problems. The successful manager is something of a politician. He must adapt to his environment. As Harbison and Myers state: "His (the manager's) policies are thus the result of accommodations, and his philosophy at any one period is likely to be a rationalization of the cumulative impact of the pressures which have been brought to bear upon him. In other words, management must adjust to its environment."<sup>6</sup>

In a study of American executives in South America from 1958 to 1960 the authors found that the American businessman recognizes this need to adapt. Few of these businessmen could identify in what precise way the new American assignee's approach and understanding were inadequate. But all manifested an awareness that several years on the job abroad yields an alteration in the man as a manager—that perhaps intuitively he adopts a new attitude, a new approach or philosophy which is more conducive to managerial effectiveness.

The validity of this thesis is further supported by the change in American management philosophy through time. Our own management philosophy today is a product of the past. It has appropriately changed through time as public opinion, unionization, and government policy have altered the businessman's decision-making environment.

Today's concept of what constitutes appropriate and effective conduct among business leaders stands in vivid contrast to that which prevailed seventy-five years ago in the U.S. American management philosophy of 1875 would hardly be appropriate for the U.S. in 1960. Similarly a management philosophy which is appropriate for Chicago today is not necessarily appropriate for Calcutta or Buenos Aires.

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<sup>5</sup> Ralph C. Davis, "A Philosophy of Management," *The Journal of the Academy of Management*, December, 1958.

<sup>6</sup> Harbison and Myers, *op. cit.*, p. 61.

We tend to strive for a unified, universally valid philosophy by reference to which management action is appropriate and meaningful. Professor R. C. Davis, in discussing a management philosophy, suggests that a philosophy can and should be scientific in that it is based upon and derived from valid tenets and is applicable to the solution of managerial problems anywhere.<sup>7</sup> But if the resultant philosophy is appropriate and valid only for a given economic-cultural framework, it cannot be universal.

American management experience abroad provides evidence that our uniquely American philosophy of management is not universally applicable but rather is a special case. For American enterprise and American management, recognizing this fact is important.

<sup>7</sup> R. C. Davis, *op. cit.*



## *Meetings of Interest*

### MIDWEST MANAGEMENT FACULTY CONFERENCE

The Fourth Annual Midwest Management Faculty Conference will be held at Bowling Green State University, Bowling Green, Ohio, April 28 and 29, 1961. The planning committee consists of Professors Henderson, Waterhouse, (Co-chairmen), Rahdert, and Dvorsky.

One session, devoted to "Planning Theory," will be conducted by Prof. Preston P. LeBreton, University of Washington. A second session, led by Prof. John Mee of Indiana University, will be devoted to "How Management Thought Has Developed in the Twentieth Century." A prominent American industrialist will deliver a banquet address.

On the following day will be four concurrent discussion sessions, led by Professors Charles Campbell, Rollin Simonds, Karl Rahdert and Bruce DeSpelder, on: (1) "Teaching Management Courses in a Liberal Arts College," (2) "Continuing Education in Management," (3) "Methodology for Management Research," and (4) "Simulation—A Technique of Training."

### SURVEY RESEARCH CENTER

The Survey Research Center of the University of Michigan has announced its 14th Annual Summer Institute June 26 to July 22 (introductory), and July 24 to August 19, 1961. This is a program of training, both introductory and advanced, in the special techniques of survey research, applied to the participants' fields of interest.

### AMERICAN SOCIETY FOR PERSONNEL ADMINISTRATION

The American Society for Personnel Administration will hold its Thirteenth Annual Conference on May 2-4, 1961, in Minneapolis, Minnesota. Further information may be obtained from Mr. Wayne K. Kirchner, Minnesota Mining and Manufacturing Company, 900 Bush Avenue, St. Paul 6, Minnesota.

## *Short Notes on New Books*

Sidney Siegel and Lawrence E. Fouraker, *Bargaining and Group Decision Making*, New York, McGraw-Hill Book Company, 1960, was the recipient of the \$1000 Monograph Prize of the American Academy of Arts and Sciences for 1959.

Eliot D. Chapple and Leonard R. Sayles, *The Measure of Management*, New York, The Macmillan Company, 1961. This analysis of organizational measurement techniques for improving executive and organizational performance is based on methods of interactional analysis pioneered by Eliot D. Chapple, and on the studies of Leonard Sayles on work flow as the basis of organization structure. This is a controversial and stimulating book.

The reader interested in research methodologies will want to see *Human Organization Research*, by R. N. Adams and J. J. Preiss (editors). This book presents papers previously published in *Human Organization*, the journal of the Society for Applied Anthropology. The book is published for the Society by the Dorsey Press, Inc., of Homewood, Illinois.

Heinz Hartmann, *Authority and Organization in German Management*, published by the Princeton University Press, 1959, has many implications of interest to students of management in the United States.

C. West Churchman, *Prediction and Optimal Decision* is significant for its dealing with value systems. Its sub-title is "philosophical issues of a science of values." Specifically it addresses itself to the question of whether science can verify recommendations to managers, and if so, in what way. Illustrations are drawn from the social sciences, management sciences, and operations research.

# *Two Approaches to Computer Simulation<sup>1</sup>*

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The two approaches to computer simulation which are discussed in this paper are called "synthesis" and "analysis." Synthesis and analysis differ in that they are designed to answer different types of questions and they require different classes of empirical information. As a preliminary to the discussion of these two approaches, we shall first define the terms "simulation" and "computer models."

## SIMULATION

Simulation is a technique for studying the behavior of complex systems. The usefulness of this technique has been widely demonstrated in increasing our understanding of a wide range of phenomena from such fields as economics, psychology, business and industry, engineering, physics, chemistry, and military strategy, tactics, and logistics.

In exploring the behavior of complex systems, scientists and engineers frequently utilize intellectual constructs known as "models." A formal model of a complex system is an abstract representation of the real system, defined or characterized by a set of explicitly stated assumptions. Since any model is necessarily a simplification of the real system to which it corresponds, to prevent the model from being "over-simplified," it is useful to specify in advance the types of applications for which the model is intended, thus indicating the areas where considerable amounts of realistic detail are required.

A simulation model is one particular kind of formal model. The explicit assumptions which characterize a simulation model describe the dynamic processes determining the behavior of the complex system being studied. To simulate a complex system, we first formulate a simulation model of the system, and then we sequentially carry out the dynamic processes which are specified by the explicit assumptions of the model. If the simulation model is properly formulated, relative to the types of questions it is intended to answer, then simulation can provide a considerable amount of useful information about the corresponding real system.

There are a variety of mechanisms which can be used in constructing simulation models. They can be classified under three broad headings: physical simulation models, analog simulation models, and mathematical simulation models.

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<sup>1</sup>This paper was presented at the Twentieth Annual Meeting of the Academy of Management in St. Louis, Missouri, on December 28, 1960.

Physical simulation models are scaled reproductions of the corresponding system. Since physical simulation models usually portray reality on a greatly reduced scale, they can also be thought of as miniaturized reconstructions of complex systems. Some examples of physical simulation models are scale model airplanes in wind tunnels, scale model ships in flood basins, military maneuvers, and pilot production plants. While there are some types of applications for which physical simulation models are extremely useful, such models are in general more expensive to construct and more awkward to manipulate than analog or mathematical simulation models.

Both analog and physical simulation models are endowed with an air of concreteness, since they are fabricated from such components as human beings and hardware items. However, these two types of simulation models differ considerably in the manner by which they portray reality. Rather than trying to be a conveniently scaled copy of a complex system, an analog simulation model is intended to be merely an analogy of the corresponding system. Webster defines "analogy" as "a relation of likeness, between two things or of one thing to or with another, consisting in the resemblance not of the things themselves but of two or more attributes, circumstances, or effects."<sup>2</sup> While the actual appearance of an analog simulation model is usually very different from that of the corresponding complex system, the components comprising the analog simulation model are interconnected in ways which are analogous to the interrelations among the corresponding components in the real system. Some examples of analog simulation models are an electronic analog of an oil pipeline network, a hydraulic analog of the circular flow of money in an economic system, and a mechanical analog of a production and distribution system.

In contrast to the concreteness of both physical and analog simulation models, mathematical simulation models are composed entirely of abstract symbols. In a mathematical simulation model, a set of mathematical relations is used to characterize the dynamic processes present in the real dynamic system. In simulating a mathematical model, computational procedures are used to trace numerically the implications of these mathematical relations. Various kinds of calculating devices can be used in simulating a mathematical model. For very simple models, a human using only a pencil and paper might be adequate. As the models become more complex, a human simulating the model might find it advantageous to use some mechanical computational aids such as a desk calculator, adding machine, slide rule, or table of logarithms. Most of the interesting mathematical simulation models which have been formulated are so complex that they call for the use of an electronic computer, of either the analog or the digital type. However, no matter what type of computer is used to simulate a mathematical model, its function is simply that of carrying out in numerical terms the dynamic processes embodied in the formal assumptions of the model.

<sup>2</sup> Webster's New Collegiate Dictionary, Springfield, Massachusetts; G. and C. Merriam Co., 1956, p. 32.

### COMPUTER MODELS

The term "computer model" is used to refer to a mathematical model which is intended to be simulated on an electronic digital computer. Computer models are the most widely used and versatile type of simulation model. The potential applicability of computer models is limitless, for any mathematical model, no matter how large and how complex, can in principle be simulated by an appropriate electronic digital computer. However, in practice economic considerations limit the comprehensiveness of computer models, since even the largest and fastest electronic computer has neither infinite storage capacity nor infinitesimal operating speeds, and the costs of computer time are often substantial. To a greater extent than is true of other types of simulation models, computer models have demonstrated their usefulness for studying the behavior of complex systems in such diverse areas as the physical sciences, the social sciences, engineering, management, and the military.

The greatest single advantage of computer models in comparison with other types of either simulation or non-simulation models is the relative ease with which considerable amounts of realism, together with the concomitant complexity, can be embodied in the models. While adding complexity will always increase the expense and difficulty of deriving the implications of a computer model, in principle it is always possible (if not necessarily practical) to simulate a computer model, no matter how complex it might be. In contrast, adding complexity to non-computer models will not only increase the expense and difficulty of deriving the implications of the model, but it will often lead to models which even in principle cannot be made to yield any conclusions.

In comparison with other types of simulation models, computer models possess four additional advantages. First, because modern electronic digital computers operate at extremely high speeds, it is usually much faster to derive interesting consequences from computer models than from other types of simulation models. Second, because of the great accuracy of electronic digital computers, it is not very likely that arithmetical or other simple errors will occur and cause erroneous inferences to be drawn from the model. Third, the results of a computer model are completely reproducible. If the same computer program is run several times using the same input data, exactly the same output will be produced every time. Finally, a computer model can more easily assume a modular character than can other types of simulation models. It is extremely convenient to be able to formulate a complex model in terms of several component submodels, to deal with each component separately at first, and then to integrate them into a complete model.

In comparing computer models with conventional mathematical models, it is necessary to consider the extent to which the different models describe the corresponding real system. If a direct mathematical solution can be obtained for a formal mathematical model, considerably more information about the behavior of the corresponding system is thereby obtained than would be provided by using simulation procedures on the same model. Furthermore, it is usually less expensive to solve a model mathematically whenever it is possible than to trace its solution numerically through simulation techniques. However, it is often the case

that a direct mathematical solution cannot be obtained for a computer model. In this situation, the researcher must decide whether it is better to utilize computer simulation techniques to obtain "less general" and "more expensive" results for a complex, realistic, and meaningful model, or else to simplify the model until it can be solved mathematically, thus obtaining "more general" and "less expensive" results for a simple, unrealistic, and possibly inapplicable model. Increasingly, the practical answer to this strategic question is turning out to favor computer simulation models, because of the extremely large amounts of relevant and realistic detail which can be incorporated in them. The trend towards the use of computer models should accelerate as researchers gain more experience and greater ability in working effectively with them, and as electronic digital computers become larger, faster, and less expensive.

### SYNTHESIS AND ANALYSIS

Now that we have discussed the general concept of simulation and the importance of electronic computers in current simulation studies, we are ready to consider the two different approaches which can be taken in using computer models to explore the behavior of complex systems. In another paper,<sup>3</sup> we have applied the labels "analysis" and "synthesis" to these two approaches. This usage is suggested by the primary definitions of these terms given by Webster: "analysis" is "separation of anything into constituent parts or elements; also an examination of anything to distinguish its component parts or elements, separately or in their relation to the whole";<sup>4</sup> "synthesis" is "composition or combination of parts, elements, etc., so as to form a whole; also, the whole thus formed."<sup>5</sup> The basis for the distinction between analysis and synthesis rests upon the types of fundamental questions the researcher is trying to answer and the kinds of empirical knowledge he possesses.

Most operations research simulation studies have used computers as tools of synthesis. In a computer model intended for synthesis, all of the individual structural relations are assumed known to a high degree of accuracy. However, what is not known is how the component relations will interact as a complete system.<sup>6</sup> In this situation, the question in which the researcher is primarily interested is what will be the behavior of the over-all system? Although the entire system response is determined once the characteristics of all the structural relations have been specified, in practice the forms of the underlying relations are frequently so complex and the number of variables contained in them is frequently so large that

<sup>3</sup> Kalman J. Cohen and Richard M. Cyert, "Computer Models in Dynamic Economics," *The Quarterly Journal of Economics*, Vol. 75, No. 1 (February, 1961).

<sup>4</sup> Webster's *New Collegiate Dictionary*, *op. cit.*, p. 32.

<sup>5</sup> *Ibid.*, p. 862.

<sup>6</sup> The complete system may in fact have never been observed, and the researcher may even hope that it never will be, as, for example, when the model represents an air battle between two Great Powers. In this connection, see R. H. Adams and J. L. Jenkins, "Simulation of Air Operations with the Air Battle Model," (abstract), *Bulletin of the Operations Research Society of America*, Vol. 7, Supplement 2 (1959), pp. B-96f.

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no mathematical techniques are known which will enable us to derive the over-all system behavior as a set of closed mathematical formulas. When this is the case, the operating characteristics of all the components of the system can be represented by a computer program, and an electronic computer can be used to simulate the behavior of the over-all system. The output from the computer is then assumed to correspond to the time paths which would be traced by the real system.

When computer simulation is used as a tool of analysis, the situation is almost exactly the opposite of that pictured above. The over-all behavior of the system is observable and known, but the characteristics of the individual components comprising the system are not completely understood.<sup>7</sup> In this situation, the researcher is interested in discovering the structural relations which underlie the system. One way of testing whether he has is to try to formulate a model specifying the actions of each individual component, and then to manipulate the model to see whether the resulting system corresponds to observed behavior. If the forms of the separate equations of the model are reasonably simple and if the number of individual variables involved is reasonably small, then traditional mathematical methods may suffice for this purpose. Frequently, however, it will be impossible to derive a set of closed mathematical formulas which embody the consequences of the model, but when this is the case, it is always possible to use computer simulation as a technique for manipulating the formal model.

In summary, when computer models are used for purposes of synthesis, it is assumed that we satisfactorily know the individual behavior of the underlying components of a complex system, and that our primary interest is in discovering the unknown behavior of the complete system. When computer models are used for purposes of analysis, on the other hand, it is assumed that we satisfactorily know the over-all behavior of the complete system, and that we are mainly interested in inferring the unknown behavior of the individual parts of the system.

The use of computer models for synthesis is an example of pure deductive logic. The operating characteristics of the individual components are essentially the postulates of a formal deductive system, the programmed interactions of the components with each other are the rules of inference, and the over-all patterns of behavior traced by the complete system are the derived theorems. In any formal deductive system, once we agree that the postulates and the rules of inference are empirically true, we necessarily agree to accept all theorems derived from them as also being empirically true. Hence, when a computer model is used as a tool of synthesis, the problem of empirical validation of the model should primarily be focused on the level of the detailed actions and interactions of the individual components.

The use of computer models for analysis is an example of pure inductive logic, i.e., of empirical inference. Although the underlying operating characteristics of the system's components are tentatively treated as postulates, the fundamental interactions of the components as rules of inference, and the over-all system

<sup>7</sup>This is frequently the case in economics. For a specific example, see Kalman J. Cohen, *Computer Models of the Shoe, Leather, Hide Sequence*, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1960.

behavior as theorems of a formal deductive system, empirical testing is carried out at the level of the theorems, i.e., with regard to the behavior of the complete system. If the over-all system behavior is in fact found to be in serious disagreement with the "theorems" derived from the model, we then must infer that the formal model is in some way an inadequate representation of the world. However, when the time paths generated by the computer model correspond closely to the observed behavior of the complete system, then the underlying model must be regarded as confirmed by the available evidence.<sup>8</sup>

In practice, some computer simulation studies seem to be blends of both the synthesis and the analysis approaches.<sup>9</sup> This will occur most frequently when we have fragmentary but incomplete empirical knowledge of both the complete system and its individual parts. In this circumstance, the researcher can obtain the greatest benefit from computer models if he goes through an iterative process of alternately using simulation as a tool of analysis and as a procedure for synthesis, obtaining successive refinements in his knowledge of the behavior of the underlying components and the over-all system at each stage.

It is useful to draw a sharp distinction between analysis and synthesis, the two approaches to computer simulation, in order to establish the criteria whereby some important methodological questions can be answered. A conscientious researcher, in trying to exploit the full potential which computer simulation techniques can offer in studying the behavior of complex systems, must find answers to such questions as how should the functional forms in a computer model be specified, how should the parameters of a computer model be estimated, and how should a computer model be validated? The manner in which these questions should be answered will differ depending on whether the computer model is being used for purposes of analysis or of synthesis.<sup>10</sup> These methodological problems are relatively more important when computer simulation is used as a tool of analysis than when it is used as a technique for synthesis. Even in the latter case, however, they are probably worthy of more explicit consideration than has usually been accorded them by researchers. It is all too easy to assume that we in fact ade-

<sup>8</sup> Strictly speaking, it would be more accurate to say "not refuted" than "confirmed" in this case, for it is always possible that more than one model could be found which would yield the same complete system behavior. This problem is not unique to the use of computer simulation as a tool of analysis, but it essentially arises in all empirical sciences. For a general philosophical discussion of this problem, see Bertrand Russell, *Human Knowledge: Its Scope and Limits*, New York: Simon and Schuster, 1948, pp. 421-507.

<sup>9</sup> For example, see Jay W. Forrester, "Industrial Dynamics—A Major Breakthrough for Decision Makers," *Harvard Business Review*, Vol. 36, No. 4 (July-August, 1958), pp. 37-66; Alan J. Rowe, "A Research Approach in Management Controls," *Management Control Systems*, Donald G. Malcolm, Alan J. Rowe, and Lorimer F. McConnell, eds., New York: John Wiley and Sons, Inc., 1960, pp. 273-299; and Joel M. Kibbee, "Management Control Simulation," *ibid.*, pp. 300-320.

<sup>10</sup> For a discussion of the methodological problems which arise from the use of computer models as a tool of analysis, see Cohen and Cyert, *op. cit.* In contrast, considerations of the methodological problems present when computer models are used for purposes of synthesis are presented in R. W. Conway, B. M. Johnson, and W. L. Maxwell, "Some Problems of Digital Systems Simulation," *Management Science*, Vol. 6, No. 1 (October, 1959); and in John W. Wester, Jr., "Experience in Complex Simulation," (abstract), *Bulletin of the Operations Research Society of America*, Vol. 7, Supplement 2 (1959), pp. B-95f.

quately know the individual behavior of the components in particular systems. Even though this may be true at a gross level, overlooking some of the more subtle interactions of the individual components can introduce serious errors into the resulting over-all system behavior. For example, when the individual structural equations of the model contain stochastic terms, we might correctly identify the marginal distributions from which each random element is drawn, and yet go seriously astray by incorrectly assuming that these stochastic terms are independently distributed and non-serially correlated. Even though computer simulation is used strictly for purposes of synthesis, it is prudent to check our assumed knowledge of the individual components' behavior by trying empirically to validate the over-all system behavior for at least one case.<sup>11</sup>

<sup>11</sup> One example where such an attempt was made is Hebron E. Adams and Richard E. Forrester, "Carmonette: A Computer Combat Simulation," (abstract), *Bulletin of the Operations Research Society of America*, Vol. 7, Supplement 2 (1959), pp. B-98f.

## 1960 ANNUAL PROCEEDINGS

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## *New Publications of General Interest*

The U. S. Government Printing Office has published the January 1959 edition of its *Style Manual*. Newly revised, the Manual provides practical and factual information for those producing printed, mimeographed, or typewritten material. It answers questions on style and good usage, and gives rules and examples on punctuation, tables, numbers, et cetera. Clothbound edition, \$2.75. Abridged edition, paperbound, \$1.25.

A controversial plan to conquer the business cycle is outlined in *Economic Issues of the 1960s*, a new McGraw-Hill book by Alvin H. Hansen, formerly Professor of Political Economy, Harvard University. Professor Hansen would not rely primarily on monetary policy to control the business cycle. He would substitute automatic adjustments of tax rates. Professor Hansen suggests that major countercyclical controls be extended to cover depreciation allowances and capital spending. He would also favor cyclical adjustment of advertising expenditures, which he believes create inflationary pressures by running with the economic tide.

### AUTOMOTIVE UNION NEWSPAPERS

What has been called the "best collection of automotive union newspapers in the country" has been presented to the labor archives of Wayne State University by Local 7 of the UAW-CIO.

This volume collection traces the growth of industrial automotive unionism since 1930, with special emphasis on the UAW. The collection is particularly valuable because it contains the local edition of each union. Included are materials on many locals that are no longer operating, such as Packard, Hudson, and Motor Products.

### INDEX TO LABOR UNION PERIODICALS

*The University of Michigan Index to Labor Union Periodicals*, is published by the Bureau of Industrial Relations, School of Business, University of Michigan. Prior to this time, the contents of labor union newspapers and journals has remained for the most part untouched by researchers, owing to the magnitude of the search problem. Despite the volume of printed material put out by labor unions, little is known about the actual state of union thinking and writing because this vast amount of material has never been systematically analyzed. The Index was established on a permanent basis on December 1, 1960, as a subscription service, with the first volume including the month of January through June, 1960. This service presents data in a convenient, highly usable form, with numerous annotations. From the initial volume on, each month will be published as a separate unit, with the additional publication of a cumulative annual volume.

# *The Planning Function in the Business Enterprise*

NORMAN F. DUFFY  
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Few people question the importance of planning in the business enterprise today. As Cordiner has said:

The hallmark of leadership is the ability to anticipate the reasonably foreseeable needs of tomorrow with at least some clarity and confidence . . . the long-range viewpoint which today's manager must develop as a habit of mind.<sup>1</sup>

In this article, after a brief note on management's view of planning, the problem will be framed against the background of current organization theory. Some recommendations aimed at improving planning in the business enterprise will then be presented.

Essentially, planning is the exercise of foresight—the adjustment of relationships between things in advance of the events affecting them. The plan itself is a set of interrelated decisions, a pattern of complementary means selected with a view to the achievement of one or more goals.<sup>2</sup>

## MANAGEMENT'S VIEW OF PLANNING

Planning has always been one of the major functions of the executive in the "classical" school of management thought. Urwick took Fayol's concept of planning—"prevoyance"—and split it into forecasting and planning. Planning, he said, was

fundamentally an intellectual process, a mental disposition to do things in an orderly way, to think before acting, and to act in the light of facts rather than guesses.<sup>3</sup>

At the lower levels in the organization, planning is often routine; decisions involve only a short time span, operate within narrow constraints, and have immediate and operationally identifiable objectives.<sup>4</sup>

The main concern of this article, however, is with planning as a top management function. This planning involves organizational goals and objectives.

The relationship between goals and planning has been stated by Drucker in the following terms:

<sup>1</sup> R. J. Cordiner, *New Frontiers for Professional Managers*, (New York: McGraw-Hill, 1956), pp. 84-91.

<sup>2</sup> M. H. Jones, *Executive Decision Making*, (Homewood: Irwin, 1957), p. 277.

<sup>3</sup> L. Urwick, *The Elements of Administration*, (New York: Harper, 1943), p. 33.

<sup>4</sup> R. M. Cyert, H. A. Simon and D. B. Trow, "Observation of a Business," *Journal of Business*, (October, 1956), pp. 237-248.

An objective, a goal, a target serves to determine what action to take to obtain results tomorrow. It is based on anticipating the future. It requires action to model the future. It always balances present means and future results, results in the immediate future and results in the more distant future. . . . Practically every basic management decision is a long-range decision. . . . Management has no choice but to anticipate the future, to mold it and to balance short-range and long-range goals.<sup>6</sup>

There is evidence to suggest that the rapid development of an organization depends at least in part on its willingness to formulate and adopt plans rejecting traditional pathways towards goals, or even to reformulate the goals themselves.<sup>7</sup> Much of the criticism of top management planning is concerned with its myopia, its ill-defined goals, and its tendency to approve decisions from below without initiative or due regard to the changing environment.<sup>8</sup> There is also the possibility that top executives may be temperamentally unsuited to planning; because of their strong orientation to immediate realities they may be unable to get above reality to plan for the future.<sup>9</sup>

### PLANNING AND ORGANIZATION THEORY

It is clear that planning involves decision making and this is especially true of unstructured or unprogrammed planning. Decision making is intimately connected to organization structure. As McDonald has said, "Ask an executive how he makes decisions and he will tell you how his organization works."<sup>10</sup> For this reason, a study of the relationship between planning decisions and organization theory is essential to any understanding of planning in the business enterprise.

The characteristic feature of an organization is its primary orientation toward a specific goal.<sup>11</sup> The main starting point for analyzing any social system is value pattern because this defines the basic orientation of the organization and guides the activities of people in it. Acceptance of the generalized values of the larger system is usually implied. In the business enterprise the major goal is the production of some kind of economic value—goods or services—and this takes precedence over other interests. Money is the general measure and symbol of success, but profit-making is not a function performed on behalf of society. In discussing planning we are concerned with organizing in the sense of total adjustment of the enterprise and its goals, a long-run phenomenon akin to Schumpeter's entrepreneurship.

As a goal profit maximizing is difficult to make meaningful at the lower levels in the organization. Evidence also substantiates the statement made above that

<sup>6</sup> P. F. Drucker, *The Practice of Management*, (New York: Harper, 1954), p. 88.

<sup>7</sup> D. Katz, "Social Psychology and Group Processes," in *Annual Review of Psychology*, (Stanford: Annual Reviews, 1951), p. 144.

<sup>8</sup> P. E. Holden, L. S. Fish and H. L. Smith, *Top Management Organization and Control*, (New York: McGraw-Hill, 1951), p. 15. J. E. Janney, "Company Presidents Look at Their Successors," *Harvard Business Review*, (September—October, 1954), pp. 45-53.

<sup>9</sup> W. E. Henry, "The Business Executive: The Psychodynamics of a Social Role," *American Journal of Sociology*, (January, 1949), pp. 286-291.

<sup>10</sup> J. McDonald, "How Executives Make Decisions," in the Editors of Fortune, *The Executive Life*, (Garden City: Doubleday, 1956), pp. 161-178.

<sup>11</sup> T. Parsons, "Suggestions for a Sociological Approach to the Theory of Organizations," *Administrative Science Quarterly*, (June, 1956), 63-85.

profit is more or less a symbol of success or that a certain level of profit is merely one of a number of organized goals.<sup>11</sup> A quarter of a century ago Mooney and Reiley discussed the economic values, both psychic and material, which determine the nature of industrial objectives.<sup>12</sup> In some cultures moral sentiment operates quite strongly in this field, limiting the amount of profit and justifying full cost pricing as "fair." No phase of management calls for more wisdom or a finer sense of values than the planning and revision of organizational goals. These can have a profound effect on the growth and health of the enterprise in the long run.

The main link between planning and goal structure is the necessity to adjust organizational objectives.<sup>13</sup> Goal setting is a matter of defining the desired relationships between an organization and its environment; a change in either requires a review of currently held goals and possibly a revision of them.<sup>14</sup> The processes of economic growth change the environment. New institutions, such as trade unions, arise and become powerful. Entrepreneurial activity changes the economic and political environment and the relation of the firm to it; this, in turn, produces changes in the goals and in entrepreneurial behavior. Even if the goals remain constant, reinterpretation is needed as changes occur in the organization, the environment, or both. Re-appraisal of goals is a recurrent problem and one major requirement for survival is the ability to react to environmental changes fast enough to avoid extinction. It is not surprising, therefore, that this concept of flexibility has been used as one criterion of organizational effectiveness.

As a final word on this aspect of the subject, the problem of goal displacement must be recognized and the planning of goals and sub-goals carefully watched to see that instrumental values do not become terminal ones.

### NON-ROUTINE PLANNING

In the large business, planning at the lower levels of the organization is more or less a routine matter. The basic steps of decision-making—the search for alternatives, the determination of the consequences of each, and their evaluation—may be severely truncated. The type of activity with which we are concerned is *unroutinized* planning. Its main purpose is to have a program ready for use when the occasion arises so that decisions can be made rapidly and accurately at levels below top management, thereby economizing on executive time.

<sup>11</sup> D. Reisman, *The Lonely Crowd, A Study of the Changing American Character*, (New Haven: Yale University Press, 1950), pp. 138-139.

T. Levitt, "The Lonely Crowd and the Economic Man," *Quarterly Journal of Economics*, (February, 1956) pp. 95-116.

E. M. Hoover, "Some Institutional Factors in Business Investment Decisions," *American Economic Review*, (May, 1954) pp. 201-213.

Marshall thought that low wheat prices in the late nineteenth century could be accounted for by the fact that farmers in the American West were engaged not so much in the production of wheat as the production of farms; the wheat was almost a by-product, the real goal was productivity. A. Marshall, *Industry and Trade*, (London: Macmillan, 1921), p. 776.

<sup>12</sup> J. D. Mooney and A. C. Reiley, *Outward Industry*, (New York: Harper, 1931), p. 343.

<sup>13</sup> L. W. Doob, *The Plans of Men*, (New Haven: Yale University Press, 1940), p. 346.

<sup>14</sup> D. Fusfeld, "Heterogeneity of Entrepreneurial Goals," *Explorations in Entrepreneurial History*, (October, 1956), pp. 8-18.

Routinized planning is relatively efficient within its limits and because it is also a time-saver there is a strong tendency for it to be used to the exclusion of the non-routine type.<sup>15</sup> This is reinforced by techniques such as budgeting, a management control device to implement policies and check achievements against criteria. Unfortunately such procedure reduces the continual re-examination of goals; it sets precedents and establishes a *prima facie* case for the continuation of existing patterns.

In planning the choice is often made between the status quo and a number of alternatives. An increase in the number and quality of alternatives will obviously reduce the chance of the status quo being selected, other things being equal. Another factor is that the amount of information about the future states of many of the factors affecting the business enterprise drops off as the time span increases. Most decisions, therefore, are made under conditions of uncertainty.<sup>16</sup> Much planning activity will necessarily be devoted to increasing the number of alternatives and to reducing the amount of uncertainty.

When an executive makes a planning decision, the organization and its social, economic and technical environment will determine which consequences will be anticipated and which alternatives will be considered. We are concerned in the first place with factors which trigger-off the decision to make plans for changing the present routine. Awareness of the existence of the problem normally occurs when something appears which does not "fit." This may be in the environment or within the organization itself. It may be a change in tariff policy—an example of the environmental change; or it may be a rise in maintenance expenditure on a vital piece of equipment, signalling that its replacement may be necessary—an example of a change within the organization.

Once the problem is perceived, the search for alternatives plays a large part in its subsequent solution and in the quality of performance of what is seen to be a solution. The more accurate the direction of search, the more appropriate the final solution is likely to be. The perception of factors indicating the need for change, the search process itself, and the perception of the consequences of the alternatives are all related to the same factors.

Our planning model is as follows:

1. The main requirement will be the satisfaction of certain criteria;
2. When the criteria are perceived to be unsatisfied, or likely to be, plans will be made for action to remedy the situation; and
3. This will involve a search for alternatives, anticipation of the consequences of each alternative, and their subsequent evaluation.

The determination of the level of satisfaction is closely related to the determination of the level of aspiration, which is in turn partly dependent on previous experi-

<sup>15</sup> P. Meadows, "Dynamic Technology and Psychic Passivity," *American Journal of Economics and Sociology*, (January, 1955), pp. 207-212.

<sup>16</sup> M. Shubik, "Information, Risk, Ignorance and Indeterminacy," *Quarterly Journal of Economics*, (November, 1954), 629-640.

S. Schoeffler, "Toward A General Definition of Rational Action," *Kyklos*, (1954), 245-274.

ence and levels of attainment. It is also conditioned by the organizational environment. For example, the level of satisfaction may be cost or production figures achieved in other organizations which serve as reference groups, provided that these do not exceed the perceived possible level of achievement by too great an amount. If satisfactory alternatives to the status quo are easily discovered, however, the level of aspiration may rise.<sup>17</sup> In any case, over time, levels of aspiration tend to adjust to levels of achievement, except that in Western cultures there is a value set on doing better. This is one of the major drives toward planning, innovation, and performance generally. The other operational influence is the perception of cues calling for adjustment in criteria or in the behavior necessary to satisfy these criteria. In many cases the rate of adjustment will be proportional to the perceived actual or forecasted departure from the criteria, analogous to the amplidyne, a closed-loop type of control. The critical factor here is the forward projection of the departure from the criteria, as this will govern the time available for planning.

One of the central assumptions of social organization theory is that a person's perspectives are crucially limited by his position in the organization. Only at the top is there the broad knowledge which involves an understanding of how goals are linked and how they can be achieved. This fact has particular significance for the planning process because information must reach the decision-making center before any plans can be made. A large proportion of the information which acts as a stimulus to the decision-making center, or is used there in the search for alternatives and their evaluation, must pass through the communications channels of the organization. These channels act as interpreters and filters,<sup>18</sup> rejecting certain items of information because they do not see it as relevant to the organization. These particular items may be meaningful to the decision-making center but may never reach it. Action is delayed until other effects are apparent which are part of the program system, a fall in market share for instance, whereas a prior warning would have enabled plans to have been made in advance. In some cases the initial receivers of the information may not be technically competent or intellectually equipped to interpret it. In others there is a natural reluctance to transmit information which would react adversely on the person transmitting it. This biasing of information will be reinforced by learning, resulting in a gradual lowering of the level in the communication chain at which this consistently suppressed information is filtered out of the system. Also, the longer the communications channels, the longer the delay in the transmission of information and the greater the likelihood of "communications loss."<sup>19</sup> Both of these factors tend to inhibit the decision-making center's perception of both warning signs and alternatives. In complex situations especially there is a distinction between the environment and the way a

<sup>17</sup> H. A. Simon, "A Behavioral Model of Rational Choice," *Quarterly Journal of Economics*, (Feb. 1955), 99-108.

<sup>18</sup> K. W. Deutsch, "On Communication Models in the Social Sciences," *Public Opinion Quarterly*, (Fall, 1952), 356-380.

<sup>19</sup> R. M. Cyert and J. G. March, "Organizational Structure and Pricing Behavior in an Oligopolistic Market," *American Economic Review*, (March, 1955), 129-139.

person sees it. This is particularly so when group tasks must be formulated and completed before the information is transmitted, in the analysis of sales statistics for example.

### POSSIBILITIES FOR IMPROVEMENT

The analysis so far indicates that, particularly in large organizations, there will be a tendency for activity to proceed along routine lines toward some goal or cluster of goals. The need for internal change in the organization structure, or the need for new plans involving different goals or different methods of reaching the same goals, usually necessitated by changes in the environment, are not easily seen. Therefore, it is appropriate to ask what can be done to ensure that the vital function of planning is adequately performed. What the the most fruitful courses of action?

First, it may be possible to reduce the length of the communications chain to reduce both delay and the filtration out of important information. The most obvious method of doing this is to move the loci of decision-making down the organizational hierarchy—decentralization. This subject is far too large and complex to discuss in its entirety. One point, however, is worth making. A major criticism of the philosophy of decentralization is that it results in a lack of control. But, this is not necessarily so. If the management of a corporation is indoctrinated by training and by the collaborative development of plans and policies at as many hierarchical levels as possible, then top management can depend on adherence to its viewpoint. In other words, the thinking and values of members of the management team can be manipulated by this indoctrination to obtain this kind of behavior desired, despite the lack of direct control by orders and a formally centralized organization structure.

Second, in view of the inhibiting effect of programming activities, it is worthwhile to examine the possibilities of institutionalizing planning for the future. This is only feasible to a limited extent at top management level where terminal goals and objectives are determined. Planning committees may help by specifically directing the attention of a top management group to this problem. In addition, decisions made by the group are likely to be more acceptable than those made unilaterally. What is far more important is to have men at the top of the organization who are interested in looking into the future and who have a high ability to perceive relevant stimuli, integrate unstructured situations, and see their implications for the organization. This will be discussed below.

Given the main organization goals, long-range planning may be facilitated by assigning individuals, usually staff men, to work on this aspect of a particular phase of the company's operations, leaving them unfettered by routine tasks. Armco Steel's appointment of a long-term planning man to work on improvements in steel-making techniques would be a case in point.<sup>20</sup> A more general case is the research organization, the inclusion of invention as well as innovation as a part of business activity—innovation in the Schumpeterian sense had always been in-

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<sup>20</sup> "Time to Worry," *Business Week*, (April 7, 1959), 50-51.

cluded but was assumed to be external to the economic system. We would regard any research division as having as its purpose the planning of the use of fundamental knowledge to further the over-all objectives of the organization. In this respect it is vitally important to focus on fundamental knowledge rather than solely on the short-run improvement of existing methods. MacLaurin's criticism of Marconi was of this nature, that he had a pragmatic approach and was not interested in the scientific investigation of a field whose commercial possibilities seemed remote.<sup>21</sup> In this same area we may contrast the Bell Telephone Company where there is an entire department set up within the research organization whose sole function is to assess the probable needs of the future, to make judicious plans as to how they can be met, and to gauge the likely impact of scientific development upon them.<sup>22</sup> These remarks, of course, are not confined to scientific development—they apply equally well to the long-term study of the economic and political aspects of the organization's environment.

Finally, as already mentioned, it is important to have at the top of the organization men who have the "planning outlook." Because of the occupancy of nodal points in the organization's communications network by members of the lower levels of the management hierarchy, this "planning outlook" is also important there as it will affect the amount of information filtered off, or not comprehended, prior to final transmission. It would therefore be advantageous to have a management team all of whom had this ability to a degree which was at least above the average.

From the point of view of initial selection there is the possibility of using certain psychological tests.<sup>23</sup> In a more recent study by Guilford, fourteen factors emerged from a factor analysis of planning tests, four of them unique to planning ability.<sup>24</sup> Small<sup>25</sup> and Barron,<sup>26</sup> however, regard foresight alone as a non-intellectual factor, linked to personality rather than intelligence. There is little doubt that the planning process in toto involves reasoning ability, even if Small and Barron are right about foresight alone being personality-oriented. There are, of course, other factors entering into the ability to plan. A person with a well-educated mind and a solidly constructed system of ideas is more sensitive to stimuli which others do not accept as cues and is more able to integrate his perceptions. Experience in a given environment, coupled with technical knowledge, enables people to plan more effectively in this environment. In foresight and planning situations involving essentially human relations issues, there is little doubt that the possession of empathy is an important factor. On the other hand, as Reisman has pointed out,

<sup>21</sup> W. R. MacLaurin, "The Process of Technological Innovation: 'The Launching of a New Scientific Industry,'" *American Economic Review*, (March, 1950), 90-112.

<sup>22</sup> M. M. Hunt, "Bell Lab's 230 Long Range Planners," *Fortune*, (May, 1954), 120-123.

<sup>23</sup> S. D. Porteus, *The Porteus Maze Test and Intelligence*, (Palo Alto: Pacific Books, 1950).

<sup>24</sup> J. P. Guilford, "The Structure of Intellect," *Psychology Bulletin*, (July, 1956), 267-293.

<sup>25</sup> K. Small, "Planning as a Non-Intellective Component of Intelligence Behavior," *Dissertation Abstracts*, Volume 14, 1954, pp. 1814-1815.

<sup>26</sup> F. Barron, "Threshold for Perception of Human Movement in Inkblots," *Journal of Consulting Psychology*, (Feb. 1955), p. 36.

over-emphasis of this factor may well result in the other-directed man rising to the top of business and other organizations. This type of person is more concerned with human relations issues than with the technical and intellectual problems of long-range planning,<sup>27</sup> even though he may have the ability to accurately foresee the human relations consequences of what plans he makes.

### CONCLUSION

The foregoing analysis integrates a number of views on planning in the business enterprise. In this final section we shall try to tie in the threads of the argument.

Writers in management theory have recognized the importance of planning as an executive function. At the top management level the relationship between planning and the goals of the organization have been commented on, but most of the literature has been concerned with the formulation of routine planning to economic theory, particularly to the areas of innovation, investment and economic growth in general. It has been left to the organization theorists, especially Simon and his colleagues, to distinguish clearly between programmed and unprogrammed planning, and to emphasize the importance of the latter at the top management level. It has been shown that planning is dependent to a very large extent on the flow of information, processed and unprocessed, along the organization's channels of communication. The vital role of the communications process has been pointed out by Deutsch and others, particularly the tendency for certain types of information to get filtered off in the process and therefore not transmitted to the major decision-making centers where planning is initiated.

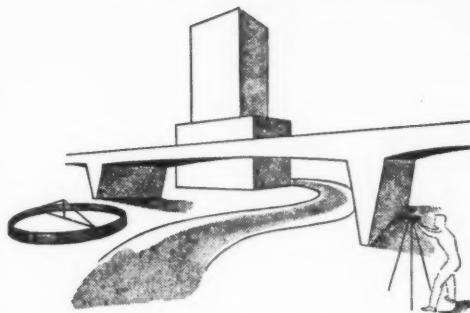
In the light of the discussion, the planning function could be facilitated by:

1. Decentralization to shorten the communications channels;
2. Institutionalization of the planning process by the setting up of suborganizations free from routine tasks and which can devote their time to unprogrammed planning and;
3. The recruitment of individuals with a "planning outlook" for management positions. The contribution of psychology to this area is as yet unrealized but it promises to be extensive.

Finally, as in so many areas of organization theory, there is an obvious need for field work to test the tentative hypotheses that have been put forward in the literature. Such field work would also assist in the integration of the various disciplines which overlap in this area.

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<sup>27</sup> Y. Brozen, "Business Leadership and Technological Change," *American Journal of Economics and Sociology*, (October, 1954), pp. 13-30.



## Management in Perspective

### A SUGGESTED SOLUTION TO LINE VERSUS STAFF PROBLEMS IN ORGANIZATION THEORY

Gulick in *The Theory of Organization* asserts that it is the line executive's function to act, and the staff executive's function to think.<sup>1</sup> Petersen and Plowman have advanced a related concept by stating that staff officers are assigned an "authority of ideas," and line officers an "authority to command."<sup>2</sup> J. D. Mooney expressed a similar idea in noting that "the line represents the authority of man; the staff, the authority of ideas."<sup>3</sup>

The tendency to distinguish between line and staff in terms of a division of the managerial function may have evolved from F. W. Taylor's attempt to separate planning from performance. Taylor, in his effort to specialize functions, enunciated a concept of functional foremanship which attempted to specialize the functions of foremen into sets at the planning and at the performance levels. The failure of Taylor's concept may be attributed to the attempt to divide accountability: a line function is divided which, according to the scalar chain principles, should not be fragmentized.

The confusion which surrounds line and staff relationships has been compounded partly by the tendency to regard them as subdivisions of managerial functions. Staff activities are described as counseling and advising line officers to assist them in their managerial functions.

#### *Areas of Conflict*

If the nature of the staff job is to advise and not command, to persuade others about the worth of ideas and not to order their implementation, the staff officer's line superior must accept responsibility for deciding and directing the execution of plans and recommendations through the scalar chain below him.

Thus the staff executive cannot force his findings and plans on unwilling line executives to whom the plans are in reality being "sold." The chief executive, in a

<sup>1</sup> L. Gulick and L. Urwick (eds.), *Papers on the Science of Administration*, (New York: Institute of Public Administration, 1937).

<sup>2</sup> Petersen, E. and Plowman, E. G., *Business Organization and Management*, 3rd ed., Homewood, Ill., Richard D. Irwin Inc., 1953.

<sup>3</sup> Mooney, J. D., *Principles of Organization*, (New York: Harper & Brothers, 1947), pp. 14-15.

situation of conflict between staff and line, should and usually will support his chief line lieutenants. After receiving a recommendation from staff, the line officer must have the authority to accept, modify or reject such advice. The line officer alone should have the authority to exercise his scalar relationship with his subordinates.

The managerial function of control definitely implies action in contrast to, say, planning and analysis. Although many staff groups in the firm have titles specifying "Planning and Control," eliminating the control part of the titles would clarify the relationship. While the staff group should be responsible for the planning phase and should ascertain acceptability of the plans by the line officers, the latter alone should perform the execution of control. The actions involved in causing events to conform to plans are manifestly the function of line management. This control action with its implied feedback-correction operations forms the basis for the appraisal of line officers' success in meeting organizational objectives.

### Some Specific Examples

More concretely, production planning and control, inventory planning and control, quality planning and control, cost analysis and control are instances of this lack of dichotomy. Evidently, in view of the scalar principle and the linear delegation of managerial authority, the staff groups should limit the scope of their jobs to production planning, inventory planning, quality planning, and cost analysis, leaving control of each respective function to the line officers concerned. The control function of "regulating, checking, and keeping within planned limits," where the planned limits have the acceptance of the line officers, is irrevocably a line prerogative. *The worker and his immediate supervisor are essentially the true executors of control.*

W. R. Purcell<sup>4</sup> mentions that the quality planning staff should regard itself as being responsible also for controlling the quality of the output. Other writers have adopted a similar point of view. The contention has been made that every member of a firm *controls* the product quality. This proposition could be more effectively stated by replacing the word "controls" by "affects or influences," since everyone in an organization does not obviously "regulate, check, and keep the quality within planned limits." If everyone did control the product quality, the violation of the principles of unity of command and unity of direction so necessary for concerted action would result in chaos.

On the other hand, it should be remembered that personnel such as, say, the engineering staff certainly influence output quality through generation of plans, drawings, tolerances, specifications, and so forth. The market research staff affects output through its determination of demand information. Likewise, the production planning staff contributes to output through its interpretations of expected losses, schedules, economic ordering quantities, and other data. These illustrations of staff contribution can be continued without difficulty.

<sup>4</sup> Purcell, W. R., *Industrial Quality Control*, Vol. XV, No. 4, October, 1958.

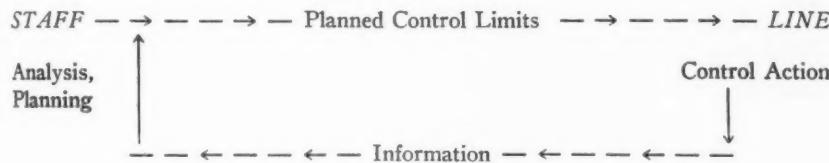
### *A More Realistic Approach*

However, the ultimate authority in taking action to maintain the process within the prescribed limits (which staff groups have assisted in formulating and planning) is solely that of the line officers. Responsibility and its equivalent authority must be retained by the line organization if an effective integration of all the groups of an industrial organization is to be maintained. If there is usurpation of line authority, single accountability is upset, line officers end up with more limited jobs, their decision-making area is reduced, line supervisors lose self-reliance or do not acquire it, and other organizationally untoward results occur. While the staff officers may often think in terms of their own specialty by the very nature of their occupation, the line officers are responsible for the final product output, really the lifeblood of the firm.

An important contribution of the staff groups may be the design of procedures which would indicate to line personnel whether control is occurring, i.e., whether the planned limits are being violated or not. Nevertheless, the initiation of action to regain the acceptable process conditions is the prerogative of the line personnel.

In terms of organizational evolution through time, the line personnel could perform planning and control during the early years of the life of an enterprise. However, as the firm grows in size and complexity, it would appear to be most effective to assign unequivocally planning and analysis to staff groups while insuring that the line personnel maintain the authority to control.

A schematic model of the suggested solution would indicate the following relationships:



### *Summary*

This paper incorporates a plea for a more explicit and systematic use of the concept of control. Too often, the term is applied in a multiplicity of ambiguous contexts. This article points the way to returning to what is probably the original meaning of the term "control." It is the line personnel and oftentimes the worker himself and his immediate supervisor who perform the feedback-control function in production operations.

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## THE NATURE OF AUTHORITY: COMMENT

Professor Merten J. Mandeville's recent article in the *Journal of the Academy of Management*<sup>1</sup> is a very useful analysis of the issues, but I wish to take exception to the following conclusion:

The writers who emphasize the structure of organization most certainly have a good case for their employment of the word "authority" . . . On the other hand, the use of the word by the behaviorists appears strained (p. 118).

Authority is defined differently by the two groups, as Professor Mandeville points out, but neither appears strained to me. Each definition is appropriate within its own frame of reference. Furthermore, I submit that the concepts of authority of the "behaviorists" and the "structure-ists"<sup>2</sup> dovetail.

*Acceptance Definition Is Not Strained*

Professor Mandeville presents the plight of Bill, who was confused about who was the "boss." Bill and the foreman were arguing heatedly when ". . . the foreman shouted, 'Bill, you are fired!' Bill, not to be confounded, replied in an equivalent tone of voice, 'You can't fire me, I quit!' " (p. 109). The illustration is held up to the acceptance definition of authority,<sup>3</sup> and the following questions were asked in the article: where did authority lie? and by whom was it exercised? (p. 114). In other words, the structural questions are being raised of what positions and what persons possess authority; but these, I believe, are the wrong questions to ask of the acceptance definition of authority. Under the acceptance definition, authority is defined as a set of behaviors. If persons behave in a certain way, one may say that an authority relationship exists. No one can exercise or possess authority if authority is defined as a type of interaction among persons. Professor Mandeville's question is formulated in terms of the "structure-ist" definition of authority and must be reformulated in order to be considered within the "behaviorist" framework.

Let us return to the plight of Bill to illustrate my point. Bill accepted the statement by the foreman, "You are fired!" as a premise for his decision to leave the company. Accordingly, an authority relation did exist for Bill's decision of

<sup>1</sup> "The Nature of Authority," *Journal of the Academy of Management*, 3 (August, 1960), 107-118.

<sup>2</sup> The term "structure-ists" is admittedly grotesque; and I must be held accountable for its usage, and not Professor Mandeville. In defense, one can argue that the term is no more awkward than "behaviorists." As an aside, I would like to suggest that the "behaviorists" also emphasize structure.

<sup>3</sup> Herbert A. Simon offers the following acceptance definition of authority: "An individual accepts authority when he sets himself a general rule that permits the communicated decision of another to guide his own choice (i.e., to serve as a premise of that choice) independently of his judgment of the correctness or acceptability of the premise." (Italics are his). See his chapter on "Authority," in *Research in Industrial Human Relations*, Conrad M. Arensberg et al. (New York: Harper and Brothers, Publishers, 1957), 103.

whether to remain with the company. It is not bandying words to describe behavior in this manner. The purpose is to identify a certain kind of behavior in order to build an explanation of why decision premises are accepted. Nor are instances unknown in industrial relations where persons in Bill's position refused to leave the employment of their companies.

Let us suppose that the foreman had asked Bill to wear safety shoes in line with company policy. Bill refused. After a heated argument, the foreman said, "Bill, you are fired!" The rest of the story is the same as before. Here, Bill accepted the foreman's decision to fire him, but did not accept the foreman's decision to direct him to wear safety shoes. The question can be raised whether authority existed. The answer appears to be what one would expect. Authority exists for some decisions and not others. The point of the story is that the acceptance definition of authority is sufficiently sensitive to distinguish among various decisions confronting Bill and the foreman. Situations in the factory can arise where the foreman is "boss," where Bill is "boss," or where neither is "boss." Rather than "strained," the acceptance definition of authority appears to be conceptually easy to work with. Confusion can arise when the acceptance definition is used within the "structure-ist" frame of reference.

#### *Concept of Authority of "Behaviorists" Dovetails with Concept of "Structure-ists"*

Bill is fired none the less; and it may appear anomalous to the "structure-ist" that authority is said *not* to exist on the question of safety shoes simply because Bill refused to wear them. Within the "behaviorist" framework, the foreman is able to make various decisions to motivate Bill to accept his authority.<sup>4</sup> Ability to make such decisions can be defined as *power*, and the foreman can be said to possess or *exercise* power. Power can be the foreman's "legitimate" right to command as well as his ability to apply sanctions.

The "structure-ist," perhaps, would argue that the foreman's ability to fire Bill is his authority. The definition of authority in terms of power appears to underlie Professor Mandeville's question—by whom was authority exercised? One does not exercise a behavioral relationship, but one does exercise power. Power can be delegated, and a parity can be achieved between it and responsibility. Again, one cannot speak of delegating a set of behaviors. The "structure-ist" concepts of authority of person and position and of situational authority appear to be based on the hypothesis that power arises out of certain circumstances relating to person, position, and situation.

Accordingly, the "behaviorist" defines authority as a set of behaviors, while the "structure-ist" implicitly defines authority as power. The two concepts are part of the managerial process and dovetail. The manager needs to obtain acceptance of decision premises to carry out his functions as manager, and he exercises powers to gain acceptance.

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University of Pittsburgh

<sup>4</sup> For a classification of motivation, see Simon, *ibid.*, pp. 104-106.

## REPLY TO C. EDWARD WEBER

Professor C. Edward Weber's comments on my article "The Nature of Authority" afford me the opportunity to amplify some of the ideas which were implied rather than explained there. As Professor Weber says, and what I also tried to indicate in my article, the two main concepts behind the uses of the term "authority" are both valid and are part of the managerial process. What I objected to was trying to make one word alone embrace both concepts, for it seems to me this has hampered our study of organization. Professor Weber has also recognized this difficulty, and he quotes Professor Simon in a footnote to explain what Weber terms the "acceptance definition." Now the acceptance of a thing is not the thing itself and, as the title of my article indicated, I was concerned with the nature of authority itself rather than a definition of a word. If we speak of the *acceptance* of authority when we mean the reaction of a person to the orders or suggestions of another, there is no misunderstanding of meaning for the modifier has removed the difficulty. But that does not tell us what authority is *per se*.

However, Professor Weber goes further and suggests that authority may be defined either as a set of behaviors or as power. This to me is unacceptable, for although the ideas he is trying to express are easily understandable, and both are useful and valid as ideas, the use of only one word to encompass entirely different concepts leads to confusion and a misunderstanding of the central thought of what is the nature of authority in an organization. In my article I utilized a quotation from Plato to point out that long ago it was recognized that the use of words that resemble each other but are not the same thing can bring about the opposite to truth. Power and authority are closely allied in many situations, but they are not the same thing and do not arise from the same cause. What I tried to emphasize was that the word authority has had a distinctive meaning for a great number of years and that its appropriation in another context without even a clear modifier being employed leads to confusion of the central issue.

The central issue, of course, is not the definition of a word, however pertinent that may be to clear understanding. What I wished to convey was that we do not now have a cohesive theory of organization and a good deal of the trouble arises from the arguments over whether authority is imposed or accepted. As Professor Weber says, each definition can be appropriate within its own frame of reference. But this is merely defining how we are using a word and not trying to discover what is the true nature of authority in an organization. For example, at one point he maintains: "Authority exists for some decisions and not others." I think I know what he means by this, but I could interpret it quite differently; and it tells us nothing at all about authority except that it is sometimes present and at other times not. Under what conditions does it exist and when does it disappear? If he had said, authority is sometimes accepted and sometimes rejected, it would be evident that there was something that existed in an organization that we could dissect and study, and we would have some basis upon which to build a theory of organizations.

The thesis of my discussion, which intentionally was not stated there, was that authority arises because of the formation of an organization and is implicit within

the organization. I did not make an attempt to define authority for I did not think much would be accomplished by this. However, I made the statement, "The nature of authority seems to be the right to see that tasks are accomplished . . ." It is my contention that authority *per se* exists in any organizational arrangement; it may or may not be exercised to its fullest extent, but nevertheless it is present and is inherent on account of the existence of the organization. We could not have a true organization without it, although we might have groups of a social nature. If authority is rejected by all the component parts, there can be no organization as we generally view the term; it will inevitably disintegrate and die. Sometimes the process is prolonged, but the result is certain.

The individual has freedom of choice as to his own actions within wide limits, but this is within his province as an individual and has nothing to do with whether he belongs to an organization or not. It is because he has a mind of his own. His behavior is his own and is determined by his reactions to several things: motives, beliefs, emotions, physical well-being at the time, and others. It may be influenced by an organizational relationship, but that is quite incidental to the fact that behavior is still an individual matter and a person's freedom of choice cannot be taken from him except by physical restraint.

The formation of an organization of two or more persons for some specific purpose creates something new which is composed of but distinct from the individuals. It is an entity in itself and should be studied from this point of view. Inherent in the thought about an organization is the idea of authority, and it does not seem possible for us to separate the two no matter how we wish to define the word. If this is true, then we would get along much faster in the study of organizations by agreeing upon a common concept of the phenomenon of organizational authority and by dropping the definition originally presented by Barnard. His writings were extremely valuable in pointing out that obedience to the dictates of authority could not be taken for granted but depended on individual acceptance. This is another phenomenon of organizational relationships, and the understanding of it has given us a much clearer idea of the management process and the difficulties involved in organizational functioning. However, it occurs because of the freedom of choice of individuals and not because they have been combined into what we term an organization.

Both Professor Weber and Professor Simon tacitly acknowledge this distinction when they speak of the *acceptance* of authority. What should be repeated is that an organization may be considered as a structure, a group of functions, or a set of expected behaviors. There is no need to stress one over the other for each point of view has its place. If we eliminate the controversy over the definition of words and agree on a standard terminology which can be applied uniformly in all situations, possibly we can then develop a real theory of organization. We seem to be approaching this desideratum, although the accomplishment probably lies some years in the future.

I should like to thank Professor Weber for his comments; for although I received several expressions of agreement with the views expounded in my article, his was the only one that attempted to resolve the misunderstanding pointed out.

Although I do not agree with his approach, which seems to me to postpone the real issue, nevertheless it shows thoughtful consideration and is a contribution to the major work.

M. J. MANDEVILLE  
University of Illinois

## *Management News and Notes*

### *Academy of Management News*

#### WESTERN DIVISION—ACADEMY OF MANAGEMENT

The second annual conference of the Western Division of the Academy of Management will take place on April 14 and 15, at the U. S. Naval Post-Graduate School, Monterey, California. Professor William Voris of Los Angeles State College is program chairman. Topics include "Approaches to Organization Theory," "Approaches to Production Management," "Behavioral Sciences and Personnel Management," and "Academic Preparation for Professors of Management."

#### SPECIAL ANNOUNCEMENT ON RESEARCH GRANTS

The Academy of Management is pleased to announce its program of management research grants for 1961 to be undertaken with the cooperation and support of the American Management Association. The Research and Publications Committee invites the submission of management research projects.

Project proposals may be submitted to the Academy by any full-time faculty member of a Department, School or College of Business Administration, or of a department in fields related to management. Applicants need not be members of the Academy.

The Research and Publications Committee of the Academy will examine the proposals received, and recommend to the A.M.A. those proposals which most merit support. The A.M.A. will then grant funds in support of projects which it will select from those recommended.

A proposal should state the specific nature for the research work being undertaken, explain why it is needed, relate the proposed work to previous work in the same area, and specify the nature of the results which are expected. Proposals should include an estimate of expenses together with suitable explanation, an approximate time budget, and the estimated date of completion. An original and five carbon copies of each proposal are required.

Letters of recommendation are not necessary, but a letter of endorsement by the applicant's department head, indicating the applicant's general capacity to

complete his project, and the amount and nature of departmental support, should accompany each proposal.

The proposed research may center on any aspect of the processes of management, organization, or administration. Studies dealing directly with specialized functional areas or with management techniques and procedures are not excluded from consideration, provided their potential findings have important implications for the general field of management. *Proposals in the areas of organization and the motivation of executives will be especially welcomed.*

Proposals will be evaluated by the Committee in accordance with the following general criteria:

- (a) Significance of the project's potential contribution to knowledge of the management process.
- (b) Adequacy of the research methods to be employed by the researcher.
- (c) Ability of the researcher to carry the project to completion within the designated time.

Since funds at present are limited, they may not be sufficient to cover salary items for researchers or their assistants. While large projects are not automatically excluded for recommendation to the A.M.A., projects designed on a relatively modest scale are currently more appropriate under this program.

Proposals for consideration in 1961 must be received by May 1, 1961. Before submitting proposals, complete details should be obtained from:

PRESTON P. LE BRETON, Chairman  
Research and Publications Committee  
Academy of Management  
c/o Department of Policy, Personnel Relations  
and Production  
University of Washington  
Seattle, Washington

### *Notes About Persons and Places*

Dr. Herbert S. Hicks, formerly of the University of Alabama, has been appointed Assistant Professor of Management at Louisiana State University.

Dalton E. McFarland assumed the position of Head of the Department of Personnel and Production Administration at Michigan State University, on February 1, 1961. He succeeds Dr. David G. Moore, who relinquished the post in order to return to full time teaching and research.

Lawrence F. Greenberger has accepted an appointment as Professor of Education at Purdue University effective February 1, 1961, where he will conduct courses in industrial training, and administer special institutes for training directors. He will conduct research and serve as sponsor of the student chapter of the American Society of Training Directors. Professor Greenberger was formerly Professor and Chairman of the Department of Management in the School of Business Administration at Duquesne University.

Claude S. George, of the University of North Carolina, was chairman of a panel discussion entitled "Educating 1980's Managers," at the meeting of the Management Section of the Southern Economic Association November 18, 1960. Other Academy members participating were: R. Earl Green, of the Georgia Institute of Technology, William E. Lane, of Alabama Polytechnic Institute, Chester F. Lay of Trinity University, and Joseph L. Massie, of the University of Kentucky.

Ernest Dale of Cornell University published an article in the issue of the Harvard Business Review entitled: "To Whom Is Management Accountable?" He presented a paper, "The Influence of Moral and Social Responsibility on the Executives of Large Corporations," at the American Economic Association meeting in December, 1960. He recently visited India under the auspices of the Ford Foundation, and lectured widely in European countries.

Edwin Flippo is to be Visiting Associate Professor at the University of Indiana for the Summer Session of 1961.

Stewart Y. McMullen has relinquished his headship of the Department of Management in the College of Commerce, University of Illinois, in order to resume full-time teaching and research, effective August 31, 1961. A successor has not yet been named.

Robert L. Katz, Assistant Professor of Business Administration at the Harvard University Graduate School of Business Administration, resigned December 31, 1960, to become President of Roma Foods Corporation, San Francisco, California.

Edmond H. Curcuru, Chairman of the Department of Industrial Management, School of Business Administration, Miami University, is resigning at the close of the current academic year to accept a position as Director of the Life Office Management Association Institute in New York City.

Arthur M. Whitehill, Jr., Reynolds Professor of Human Relations in Industry, at the University of North Carolina, recently was awarded third prize in an essay contest sponsored by Kokusai Bunka Shinkokai, the Society for International Cultural Relations, located in Tokyo, Japan. The prize, consisting of books valued at \$100, was given to Professor Whitehill for his essay, "Cultural Exchange: Hope in a Shrinking World."

Lorin A. Thompson, Director of the Bureau of Population and Economic Research, and Charles L. Quittmeyer at the University of Virginia have completed a three-year study of manufacturing development in the Southern Appalachian region. This was carried out under a Ford Foundation grant as part of a larger

study of this region, supported by the Ford Foundation, to be published later this year.

William R. Moechel, Executive Director of the Defense Management Laboratory at Ohio State University announced a new four-week seminar program for International Cooperation Administration personnel. Seminar participants will study administration, supply management techniques, and international trade. The program is being administered by Charles E. Dugan of the Laboratory staff.

Joseph L. Massie has a long-range research project in process on the functions and use of committees in management. The research utilizes analytical observation and tape recordings of actual situations. Prof. Massie will attempt to evaluate conclusions developed by group dynamics researchers in laboratories by testing them in actual companies.

Thomas J. Luck has been appointed to the President's Committee on Highway Safety to represent the National Association of Independent Insurers. He will also be a faculty member of the Executive Development Program of the University of Florida which will be held in the summer of 1961.

Paul Dauten, Jr. of the University of Illinois was elected by the Board of Directors of TEC-Search, Inc., to a three-man executive committee of that consulting firm in Evanston, Illinois.

Earl Planty, of the University of Illinois, is studying the extent to which behavioral science subjects are taught in the curricula of AACSB schools. This study is also designed to discover whether the recent Ford and Carnegie Foundation recommendations for expanding behavioral science offerings in schools of business are having an impact on business school curricular revisions.

Fremont Shull of Indiana University will devote the summer of 1961 to a research project entitled "Behavioral Aspects of Sub-Optimization in Decision Making."

Clay H. Hollister has resigned from Case Institute of Technology, having accepted a position as Executive Recruiter for Ernst and Ernst July 1, 1960.

Borje Saxberg of the University of Washington will be Visiting Professor of Production Management at Syracuse University during the summer session, 1961.

Sidney H. Phillips, Associate Professor of Production Management, Syracuse University, will participate on the faculty of the Executive Controls Program of Syracuse University at Minnowbrook Camp, August 14-18, 1961.

Samuel Ranhand will serve as visiting Assisting Professor of Management at New York University Graduate School of Business Administration during its two summer sessions in 1961. Prof. Ranhand has been appointed Chairman, Special Committee on Procedures for the Academy of Management. He has recently participated in a number of management seminars, serving as program chairman for two.

During 1960-1961, Raymond R. Colton wrote several articles on the subject of purchasing, including value analysis, purchasing ethics, and research in purchasing.

Paul J. Gordon of Indiana University attended the Third Inter-American Management Conference held in Mexico City from March 6th to 11th. How he gets time for such meetings is explained in "Formula for a Seventy-Minute Hour" in the Spring, 1961 issue of *Business Horizons*.

Philip C. Shaak will transfer from Rutgers University College to Rutgers University School of Business, July 1, 1961, where he will be Associate Professor of Management.

Franklin G. Moore, School of Business Administration, University of Michigan, will take a sabbatical leave for the fall semester, 1961, to study problems of control in decentralized factory operations.

Bruce DeSpelder, Associate Professor of Management at Wayne State University, has been named Chairman of the Management Department at that Institution.

R. Stansbury Stockton of Indiana University has a research grant for a summer project in which he will investigate quantitative aids in production and industrial engineering.

Among the Academy members attending the one-month summer program of Basic Mathematics for Application to Business at the Harvard Business School will be Stanley J. Seimer of Syracuse University.

R. W. Morell, Chairman of the Department of Business Administration at St. Joseph's College (Indiana) has been promoted to Professor of Management.

Eaton Conant will resign from the Indiana University faculty September 1, 1961, to join the faculty of The University of Chicago.

David A. Alhadeff, Professor of Business Administration, University of California, Berkeley, has become Berkeley editor of the *California Management Review*.

William J. Jaffe of the Newark College of Engineering, attended the Third Inter-American Management Conference in Mexico City March 6-11. As retiring Chairman of the Wallace Clark Board for International Management, he presented the Wallace Clark Medal to Mr. Joseph J. Cussen of Chile for his work in founding ICARE (Instituto Chileno de Administracion Racional de Empresas).

William M. Fox of the University of Florida and William Voris of Los Angeles State College are among those who will attend the Faculty Seminar in Simulation and Management Games sponsored by the Ford Foundation at the Carnegie Institute of Technology during August, 1961.

Richard Owens is returning as Visiting Professor of Management, Los Angeles State College, for the 1961-1962 academic year.

Nathaniel Stewart has been appointed Director of the Management Development Center, International Cooperation Administration, State Department. The Center's program will reach senior executives at headquarters in Washington, D.C. and in many parts of the world in which ICA missions are located.

Peter Drucker has been appointed Visiting Professor of Industry, Wharton School of Finance and Commerce, University of Pennsylvania.

Edgar G. Williams has been promoted to Professor of Management at Indiana University.

E. H. van Delden has been appointed Acting Chairman of the Industrial Relations and Personnel Administration areas of the Graduate School of Business Administration at New York University.

### *Books Completed or in Process by Academy Members*

Herbert Zollitsch of Marquette University, in collaboration with Adolph Langsner, management consultant, has completed a book entitled *Wage and Salary Administration*, published by the South-Western Publishing Company.

Robert B. Fetter, in collaboration with Winston C. Dalleck of McKinsey and Company, Inc., has completed a book entitled *Decision Models for Inventory Management*. The book is published by Richard D. Irwin, Inc.

Ernest Dale of Cornell University completed two books in 1960, both published by the McGraw-Hill Book Company: (1) *The Great Organizers*, and (2) *Staff in Organization*, with Lyndall Urwick.

C. T. Hardwick and B. F. Landuyt have emphasized administrative strategies in management in their book entitled *Administrative Strategy*, Simmons-Boardman Books, 1961.

Stanley J. Seimer, Chairman of the Production Management Department in the College of Business Administration, Syracuse University, has written a textbook entitled *Cases in Industrial Management*, to be published in June by Richard D. Irwin, Inc.

Morris E. Hurley, former Dean of the College of Business Administration, Syracuse University, now Professor and Consultant, IPSOA, Turin, Italy, published in the fall of 1960 the second edition of *Business Administration* (Prentice-Hall)—a treatment of administrative procedures in modern industry.

John G. Glover and Rudolph L. Lagai have completed a revised edition of *The Development of American Industries*, published by Simmons-Boardman Books, 1961.

R. W. Morell, Chairman of the Department of Business Administration, St. Joseph's College (Indiana) is the author of the text, *Managerial Decision-Making*, published by the Bruce Publishing Company, Milwaukee, in 1960.

Bernard Hanes of Los Angeles State College is the author of a textbook entitled *Mathematics for Management Science*, to be published by Charles E. Merrill in the fall of 1961.

Dale Henning and Preston P. LeBreton of the University of Washington are the co-authors of *Planning Theory*, published by Prentice-Hall, Inc., in 1961.

The sixth edition of *Personnel Management*, published by the McGraw-Hill Book Company, co-authored by William R. Spriegel, Walter Dill Scott, and Robert C. Clothier, appeared this spring.

William T. Jerome, Jr. is the author of the recent book, *Executive Control—The Catalyst*, published by John Wiley and Sons, Inc., 1961.

M. Warren Haynes and Joseph L. Massie have co-authored a new textbook, *Management: Concepts, Analysis, and Cases*, published in April 1961 by Prentice-Hall, Inc.

Professor Henry K. Junckerstorff of St. Louis University is the author of *Modern Management of Enterprises*, published by Martinus Nijhoff of The Hague, in 1960.

Raymond J. Ziegler of the University of Illinois is the author of a book entitled *Principles of Industrial Management Case Book*, published in 1960 by the Macmillan Company.

The second edition of *Production Control, Text and Cases*, by William Voris will appear in May, 1961, published by Richard D. Irwin, Inc.

Edwin Flippo's book, *Personnel Management*, was published March 15, 1961, by the McGraw-Hill Company, Inc.

## *News of Organizations and Institutions*

### SOUTHERN CASE WRITERS ASSOCIATION

Dr. James E. Chapman, Chairman of the Department of Management, and Dr. Francis J. Bridges, Professor of Management, at Georgia State College, have been admitted as members of the Southern Case Writers Association.

The Association, formed in 1958, consists of about 20 college professors from 14 colleges and universities who have attended the annual Harvard Case Seminar Program.

The Association operates on funds provided by the Ford Foundation for the development of Southern business case studies. The cases are published by the Intercollegiate Case Clearing House, Graduate School of Business Administration, Harvard University.

### SIGMA IOTA EPSILON

On February 20, J. K. Bailey, Chairman, Department of Management, The University of Texas, became the national president of Sigma Iota Epsilon, the national honorary and professional management fraternity, succeeding Keith Davis, Chairman, Department of Management, Arizona State University. Prof. Bailey hopes to establish new chapters of Sigma Iota Epsilon in schools offering degree programs—graduate or undergraduate—in the field of management. Founded in 1927 by student management groups at Illinois, Syracuse, and Texas, the organization has experienced a strong, steady growth. Anyone interested in starting a chapter at his school may contact Prof. Bailey at 109 Waggener Hall, College of Business Administration, the University of Texas, Austin 12, Texas.

### UNIVERSITY OF CAMBRIDGE

A one-year course in the principles of industrial management has been established in the Department of Engineering of the University of Cambridge. The course is restricted to students who have qualified for a degree in a scientific subject.

The course is not intended as a training in management but as a grounding in the analysis of industrial problems and behavior. It will stress the development of formal analytic models, and in particular, those based on statistics, but work will be done on other problem areas, which, though less easily quantified, may be tractable given effective techniques according to Prof. F. J. Willett.

The University accepted this proposal for an experimental period of five years, and the teaching began in October, 1959. The course differs radically from any other long-term management program in England in its restriction to scientists and technologists, and in its emphasis upon mathematical analysis. The design of the course draws much from the experiment of such American institutions as M. I. T. and the Carnegie Institute of Technology.

### NEW YORK UNIVERSITY GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

Aided by the Ford Foundation, the Graduate School of Business Administration at New York University will offer a Management Workshop during 1961-1962. The workshop is designed for doctoral students desiring to explore a specific problem in business administration. The work may be used for a doctoral dissertation, or to explore an area outside the special field of concentration. The 1961-1962 workshop is under the direction of Professor Dale Zand. Subjects include decision-making with emphasis on the use of mathematical models, and organizational behavior as it affects decision-making. A marketing and a finance workshop will also be offered in September. A number of doctoral fellowships with stipends of \$3500 have been established in connection with the workshop program.

## OPERATIONS RESEARCH BIBLIOGRAPHY

The St. Louis University Press has announced the publication of *Operations Research—An Annotated Bibliography*, by James H. Batchelor, second edition, 1959, 876 pages, cloth, \$10. This volume provides in convenient form a digest and index of the rapidly growing world literature of operations research up to the end of 1957, the results of a decade of research and study. There are 4,195 numbered references, two original books and articles, arranged alphabetically. It includes an index of 12,000 entries.

## UNIVERSITY OF WISCONSIN

A Center for Productivity Motivation has been established at the School of Commerce, University of Wisconsin, through a grant of \$100,000 made by the Johnson Foundation at Racine, Wisconsin. Director of the new Center is Professor W. D. Knight and associated with him will be J. J. Jehring, formerly Director of the Profit Sharing Research Foundation.

The Center offered a Symposium on February 23 and 24 at "Wingspread," the Johnson Foundation Education Center at Racine, Wisconsin, on Profit Sharing and Productivity Motivation. Attending were 26 executives in profit sharing companies from the U. S. and Canada and 15 professors from the University of Wisconsin. A summary of the papers and discussion will be available from the Center to those who write for copies.

## THE M. S. U. INVESTMENT GAME

A full scale trial of the M.S.U. Investment Game took place in the spring quarter of 1960, with twenty-six participating students. Two years (eight quarters) of experience at a rate of approximately one quarter of play per week following a two-week orientation and organization period were completed as a part of the work of a three-quarter hour ten-week course entitled Management Programming and Control.

The objective of the M.S.U. Investment Game is to enable the participants to take part in the formation and operation of the business firms composing a small competitive industry. A top-operating management game is used as a data-generation source. An over-the-counter market accommodates the trading of equity and debt securities. The exercise is adaptable to both computer and non-computer scoring.

The trials demonstrated the importance of good management and the fact that chance plays a part in determining success or failure, since in the final analysis the non-human factors in the game are the same for each company.

The players actually seemed to experience some of the pressures, confusion, frustrations, and excitement of organizing, financing, and operating a business enterprise. Problems of corporation financing and trading in debt and equity securities became immediate and personal.

Details of this investment game, with a short annotated bibliography of game models which can be used as data-generation sources, are available from Professor Richard C. Henshaw, Jr., Department of Personnel and Production Administration, Michigan State University, East Lansing, Michigan.

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